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ADDISON'S DISEASE

EXPERIENCES IN TREATMENT WITH VARIOUS SUPRARENAL PREPARATIONS *

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In the last twenty years, 115 cases of Addison's disease have been observed in the Mayo Clinic. In the early days there was no specific plan of treatment, and the results were almost always uniformly bad. Prior to 1920, desultory efforts at substitution therapy were made, with occasional success. Since then every patient with Addison's disease who has gone to the Mayo Clinic has been given especial consideration from the standpoint of substitution therapy, and considerable progress has been made. Physiologic experiments have shown, with increasing clearness, that the integrity of the suprarenal cortex is essential to life and so have given impetus to the search for a form of organotherapy that would provide complete substitution. The results of recent investigations in this field justify the hope that a practical form of such treatment may soon be achieved.

The natural course of the disease is usually progressively downward, with acute exacerbations at irregular intervals. Spontaneous remissions, persisting for a number of weeks, months or even years, may occur, and an occasional patient seems to recover spontaneously.

Several factors must be taken into consideration in the treatment of patients with Addison's disease: (1) the nature of the underlying disease and its treatment; (2) the natural course of the disease; (3) the general care of the patients; (4) the treatment of symptoms and complications, and (5) the results of specific organotherapy.

Good general treatment includes abundant rest, warmth, relaxation, freedom from work and worry, protection against stresses and strains of all kinds, and an adequate intake of food and fluids. Mention should be made of the tremendous value of a solution of dextrose, 10 per cent, and sodium chloride, 1 per cent, administered intravenously in the crises and terminal stages of the disease; these events are attended by marked dehydration. When the disease is due to tuberculosis or syphilis, appropriate treatment is indicated; but infinite care is necessary in order that such treatment does not precipitate further disturbance of the suprarenal glands.

Organotherapy is as old as the disease. The earlier results have been reviewed by Kinnicutt,[1] Johnston [2] and Adams,[3] each of whom has reviewed the literature and has summarized data. Many of the cases were duplicates and the criteria used by the various authors to indicate improvement or arrest of the disease were not uniform. Many of the patients whose conditions were reported as improved had been under observation for only a few weeks.

In presenting our results in the treatment of Addison's disease, we wish to recall the restraint and conservatism that characterized Addison's original description. We hope that in so doing we will avoid "hasty pretentions," "partial and prejudicial observations" and "overstatements of facts," which, according to Addison, should "merit the just rebuke of those possessing sounder or more dispassionate judgment."

MUIRHEAD TREATMENT

In 1920, a regimen was instituted in the case of the late Dr. Muirhead, who was suffering from Addison's disease. It was decided to utilize epinephrine to the point of tolerance, administering it subcutaneously, by rectum and by mouth repeatedly during the day, and in the maximal dose which could be tolerated by each channel of administration. In addition, whole suprarenal substance or suprarenal cortex was administered by mouth.

The immediate results in Dr. Muirhead's case were remarkable.[4] Whereas he had been bedridden on arrival, he left for home within a few weeks, feeling well on the way to recovery. He lived less than a year, however. Since that time fifty-seven patients who have gone to the Mayo Clinic with Addison's disease have been subjected to the Muirhead treatment.[5] Thirty-two cases are reported as temporarily benefited, and in twenty of these the immediate results were excellent.

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3. Adams, E. W.: The Results of Organotherapy in Addison's Disease, Practitioner **71**: 472-502 (Oct.) 1903.
4. Muirhead, A. L.: An Autograph History of a Case of Addison's Disease, J. A. M. A. **76**: 652-653 (March 5) 1921. Rowntree, L. G.: Subsequent Course of a Case of Addison's Disease, ibid. **79**: 556-557 (Aug. 12) 1922.
5. Rowntree, L. G.: Organotherapy in Addison's Disease, J. Pharmacol. & Exper. Therap. **23**: 135-156 (March) 1924; Studies in Addison's Disease, J. A. M. A. **84**: 327-335 (Jan. 31) 1925. Snell, A. M., and Rowntree, L. G.: Clinical Experience with Addison's Disease, Ann. Int. Med. **3**: 6-28 (July) 1929.

In some cases this period of improvement lasted for weeks, in others for months, and in ten cases for periods of from three to seven years. In contrast to this, the treatment was entirely without beneficial effect in twenty-five cases. The latter patients usually did not tolerate the epinephrine well, complained of increasing weakness and trembling and of nausea and vomiting, and in these cases there was a lowering, rather than an increase, in blood pressure. In general, with the Muirhead treatment, half of the patients showed some benefit, a third responded with results that were considered excellent, and a sixth were living after three years.

The results of the Muirhead treatment may well be likened to those of treatment with roentgen rays or radium in carcinoma. With the application of radium marked temporary improvement is common, and remissions last for weeks, months and occasionally for years. And just as radium is curative in many cases of carcinoma of the cervix, so the Muirhead treatment is effective in certain types of Addison's disease. Radium is regarded usually as palliative in carcinoma; the Muirhead treatment is also palliative, but like radium it may also closely approach a curative measure.

VARIOUS OTHER METHODS OF TREATMENT

In the last five years various other products, prepared from the suprarenal gland or closely related to epinephrine either in their chemical structure or pharmacologic action, have been tried in the treatment of Addison's disease. Ephedrine, introduced into medicine by Chen and Schmidt,[6] has an action like epinephrine, but Rowntree and Brown[7] found that ephedrine alone had no significant therapeutic value in Addison's disease. It may be employed to cause elevation of the blood pressure as an adjunct to specific organotherapy. Through the kindness of E. C. Kendall,[8] the opportunity has been offered of studying the effect of an oxidized derivative of epinephrine, adrenalone. This was given in large doses to several patients with Addison's disease. There were no untoward effects, but likewise there was no striking clinical benefit. Szent-Györgyi[9] recently has isolated an isomer of glycuronic acid from the suprarenal cortex, and the pigmentation in Addison's disease seems to be connected with this isomer, hexuronic acid. He found, on the other hand, that hexuronic acid did not prolong the life of suprarenalectomized dogs and it seemingly was without distinct therapeutic effect in two cases of Addison's disease. Koehler[10] also prepared an extract from the suprarenal cortex which he felt was of value in some cases of muscular asthenia. It, too, was tried, but it was found not to be of value in Addison's disease.

THE CORTICAL HORMONE OF SWINGLE AND PFIFFNER[11]

Numerous investigators have attempted for many years to isolate a cortical hormone for the treatment of Addison's disease. Among these were Rogoff and Stewart,[12] Hartman and his collaborators,[13] Koehler, and Swingle and Pfiffner.[14] Increase in the time of survival of animals following bilateral suprarenalectomy had been set up as the criterion of efficacy of these preparations. Rogoff and Stewart reported prolongation of life of suprarenalectomized cats from the usual ten or eleven days to thirty-two days, and Hartman and his collaborators reported survival for twenty-seven days. Rogoff and Stewart also reported definite beneficial results from the clinical use of their preparation in a small series of cases of Addison's disease.

The preparation of an aqueous extract of the suprarenal cortex which would maintain indefinitely the life of bilaterally suprarenalectomized cats was announced by Swingle and Pfiffner in March, 1930. Subsequently they reported that by the administration of this extract they were able to revive comatose animals that were prostrate and on the verge of death from suprarenal insufficiency, and also to restore them to an apparently normal condition and to keep them in a semblance of perfect health by daily injections.

The significance of such an announcement and the interest aroused by the possibility of using this extract in clinical medicine are obvious. An extensive experience with the so-called Muirhead treatment in cases of Addison's disease convinced Rowntree and Greene[15] of the futility of ordinary therapeutic measures in combating the crises of acute suprarenal insufficiency which develop in the course of this disease and of the great need for a more active cortical preparation which could be administered either subcutaneously or intravenously. This point was further emphasized, May 31, when the patient whose case is reported in case 1 was admitted to the hospital in collapse. The outlook seemed hopeless, but as a last resort a telegram was sent to Swingle and Pfiffner and they forwarded a supply of their cortical hormone by air mail. Since that time, it has been possible to observe the effect of this preparation on six additional patients suffering from Addison's disease. The amount of cortical hormone available for clinical use has been small and its delivery irregular, so that as yet it has not been possible to make a complete clinical study. The results to date, however, warrant this preliminary report.

REPORT OF CASES

CASE 1.—A farmer, aged 39, first came to the clinic in January, 1930. He had had pleurisy with effusion eleven years before and symptoms of Addison's disease had been present for eight months. When admitted he was in a state of collapse, with a systolic blood pressure of 78 mm. of mercury and a concentration of blood urea of 48 mg. for each 100 cc. The collapse was treated by administration of physiologic solution

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11. The hormone was prepared by Swingle and Pfiffner; the clinical application was carried out by Rowntree and Greene.

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15. Rowntree, L. G., and Greene, C. H.: The Treatment of Patients with Addison's Disease with the "Cortical Hormone" of Swingle and Pfiffner, Science **72**: 482-483 (Nov. 7) 1930.

V 96
1931

of sodium chloride and dextrose, and the Muirhead treatment was instituted. His condition improved so much that he was dismissed from the hospital thirty-nine days after admission.

Progress at home under the Muirhead treatment was satisfactory for a while but the patient was brought back to the clinic in a state of collapse, May 31. Treatment with physiologic solution of sodium chloride and dextrose was again instituted with only partial success. The cortical hormone sent by Swingle and Pfiffner arrived on the sixth day after the patient's admission to the hospital, and treatment was begun with 20 cc. daily in divided doses. Within thirty-six hours there was a marked effect on appetite and strength. The patient, who had been so nauseated as to retain water with difficulty, asked for "wieners" and sauerkraut, and in lieu of the latter ate a double order of beeksteak.

The first supply of the hormone produced considerable local irritation at the site of the injection, and, because of its content of epinephrine, it could not be given intravenously in therapeutic doses. Further supply of the hormone was not available at the time, so that the Muirhead treatment was resumed. The patient did well for a few weeks but then gradually failed and again went into collapse, from which the timely arrival of a fresh supply of cortical hormone sufficed to insure his temporary recovery.

This cycle has been repeated three times in this case. The last time it was possible to use the newest preparation of the hormone, which is practically epinephrine-free. This was given intravenously in a quantity of 20 cc. daily in divided doses. Before, the patient was excessively weak, bedridden, depressed, nauseated and losing weight, and his circulation was failing. Within forty-eight hours he had taken a new lease on life, his appetite was excellent, his strength was greatly improved and he insisted that he was "full of pep" and felt again in a state of perfect health.

CASE 2.—A laborer, aged 28, entered the clinic, Jan. 28, 1930. He had had pleurisy and influenza in 1918, 1925 and 1928 and had been in a sanatorium for tuberculous patients for eleven months in 1920, although organisms of tuberculosis had not been found in the sputum. The characteristic symptoms of Addison's disease followed a gastro-intestinal upset in July, 1929.

The patient was in collapse when he was admitted, with a systolic blood pressure of 69 mm. and a concentration of blood urea of more than 100 mg. for each 100 cc. He was given solution of sodium chloride, 1 per cent, and dextrose 10 per cent intravenously, and the Muirhead treatment was instituted. Improvement was gradual and he was dismissed from the hospital, March 30, 1930. While he was at home he gained in weight from 103 to 155 pounds (from 46.7 to 70.8 Kg.) and felt well until he contracted a severe cold the middle of June. This persisted for several weeks and caused a return of the weakness and fatigue and steady loss of weight. He had anorexia, nausea, vomiting and diarrhea for a week and was readmitted to the clinic, July 22, in a state of marked exhaustion.

Treatment with the hormone was started immediately. Within two days the patient remarked on the improvement in his strength and appetite. Treatment had to lapse after eight days because of lack of further supplies of the hormone, but during this period he gained 4 pounds (1.8 Kg.) and felt much stronger. The Muirhead treatment was resumed and the patient did fairly well, but he was gradually losing strength when a supply of the epinephrine-free hormone arrived. He was given 20 cc. a day in divided doses intravenously for two days with apparent improvement. He had gained 1 or 2 pounds (0.5 or 0.9 Kg.), and said he again felt well and strong. Since that time he has been at home and has done fairly well except for one attack involving diarrhea, sleeplessness, restlessness and profound weakness. The cortical hormone was administered by his home physician and since that time he has been in fairly good condition.

CASE 3.—A clergyman, aged 30, came to the clinic in June, 1930, because of loss of weight, failing strength and marked pigmentation. His condition was not considered serious and he was kept on the treatment with cortical hormone for only four days. There were no spectacular changes during this period and the small supply of hormone precluded its further trial.

CASE 4.—A clerk, aged 50, first came to the clinic in April, 1928. He had had tuberculosis of the hip in childhood and had had influenza and pneumonia in 1918. Characteristic symptoms of Addison's disease developed about five months before he came to the clinic, although he had lost 50 pounds (22.7 Kg.) in the preceding eighteen months. He did well under the Muirhead treatment and has been able to carry on his work satisfactorily since his first admission, although he has returned at frequent intervals for observation and advice.

The patient came back to the clinic, Aug. 15, 1930, because we had written him of the new cortical hormone. At that time he was in good condition, although from 8 to 10 pounds (from 3.6 to 4.5 Kg.) below the weight which he had been maintaining while under treatment, and 70 pounds (32.2 Kg.) below the weight before the onset of his illness. On admission, all treatment was stopped for five days. At the end of this period he was much weaker, nauseated, unable to sleep at night, darker in color, and emotionally upset. He was then given the cortical hormone intravenously for a period of three days in quantities of 15 cc. daily. Within from thirty-six to forty-eight hours the anorexia and nausea had disappeared. He said he again felt like himself, and his outlook on life had correspondingly improved. During this period of observation, exact metabolic studies were made; these results will be reported later. He returned to his home and has been well and active since.

CASE 5.—A housewife, aged 36, presented herself at the clinic for the first time, April 14, 1928, because of symptoms of palpitation, dyspnea, weakness and nervousness, which had begun two years before and had become progressively worse. There had been brownish pigmentation of the skin for about one year. The patient had been unable to work for two weeks. The pigmentation was typical of Addison's disease. Within the year, numerous black freckles had appeared over the face, back and hands. On the mucous membranes of the cheeks and gums there was mottled, bluish-brown discoloration. The skin was moist, smooth, of fine texture, and closely fitting. Although there had been a loss of 24 pounds (10.9 Kg.), it was not evident to the examiner. The blood pressure was 110 systolic and 73 diastolic.

The patient was admitted to the hospital and the Muirhead treatment was instituted; epinephrine was given hypodermically and rectally, and desiccated suprarenal cortex by mouth. The rectal administration of epinephrine was discontinued on the fifth day on account of tenesmus. There was decided improvement in all symptoms. The patient felt stronger, her appetite increased, she was less nervous, and she gained nearly 3 pounds (1.4 Kg.). There was no appreciable change in pigmentation. The blood pressure remained about the same. After thirteen days she was dismissed with the advice to continue the treatment at home.

In the course of the next fifteen months the patient returned twice for reexamination. She followed her treatment faithfully, and each time there was evidence of improvement, as manifested by increased strength and endurance. On the third admission to the clinic she reported that she had been able to do light housework without undue fatigue. However, she had lost 7 pounds (3.2 Kg.) and there was no change in blood pressure.

On the patient's fourth admission, Sept. 1, 1930, she reported that in January she had contracted a cold, which had persisted for several weeks. With the onset of this illness nausea and vomiting developed which lasted about three weeks, and she was confined to her bed for two months. Since that time, improvement has been exceedingly slow. During this illness she had been unable to administer her own treatment and as a result had discontinued it entirely, and it had not been resumed. She had aged considerably since visiting the clinic nine months previously. She was markedly depressed, extremely weak and exhausted, and dyspneic on the slightest exertion or excitement. The degree of weakness was such that a general examination could not be completed at one time. There was little, if any, change in pigmentation. She had lost 12 pounds (5.4 Kg.). There was a fall in blood pressure; the reading at this time was 102 systolic and 64 diastolic.

The patient was in the hospital for observation for four days, during which she did not receive treatment. On the

morning of the fifth day, treatment with the cortical hormone of Swingle and Pfiffner was begun. The first and second days of treatment she was given 7.5 cc. intravenously, three times daily, and on the third day she received two doses of 7.5 cc. each. There were no untoward effects from these injections. The morning we began treatment the patient was in a state of complete exhaustion and mental depression. Anorexia was marked and she vomited her morning meal. That evening there was little, if any, change in her condition. The following day she showed progressive improvement in every respect. Her strength increased, depression was less evident, and she had regained her appetite. The morning of the third day of treatment there was no doubt that a complete change had taken place. She was more cheerful than we had ever seen her and was most optimistic about her condition. There was a general feeling of well being and a remarkable increase in strength and endurance. After her morning bath and a brisk walk along the corridor she had no feeling of dyspnea or exhaustion. This would not have been possible before treatment. She volunteered the information that she had never felt better in her life and was positive that she could return unaccompanied to her home, about 200 miles distant. This trip was uneventful and she has been well since then.

CASE 6.—A farmer, aged 36, came to the clinic, Sept. 17, 1930. In the previous two or three years he had had several mild attacks of pain in the right side of the thorax which were called pleurisy, and he spent some time in a sanatorium for patients with tuberculosis, but a positive diagnosis was not made. In July, 1930, he had an indefinite infection of the right ankle with blisters and itching which may have been dermatitis venenata or blood poisoning. Since that time he had been very weak, had been easily fatigued, had lost appetite, and had had fainting spells and dyspnea on the slightest exertion. His appetite had failed progressively since July. The first of September a tooth was extracted, and this was followed by a severe reaction from which his home physician thought he would not recover. He was very ill, listless, weak, with a gastro-intestinal upset characterized by anorexia, nausea and considerable vomiting. When brought to the hospital he was markedly exhausted from the gastro-intestinal upset and was moderately dehydrated.

On general examination, marked loss of strength was apparent and was especially noticeable in the lower extremities. Loss of weight of 24 pounds (10.9 Kg.) had occurred in the previous six months. There was dark brown pigmentation of the buccal mucosa and of the lips. Spots of melanin were found on the back of the neck and in a few small areas scattered over the body. However, the characteristic distribution of pigment was lacking. Blood pressure on one occasion was found to be 84 systolic and 58 diastolic; on another occasion, 80 systolic and 60 diastolic. The pulse rate was 94 beats each minute. There was slight secondary anemia and the concentration of urea in the blood was 138 mg. in each 100 cc. Other laboratory tests gave negative results. Because of the marked anorexia, the gastro-intestinal upset and the buccal pigmentation, a diagnosis of Addison's disease was made, even in the absence of general pigmentation.

The shocklike condition on admission was combated by giving solutions of dextrose and sodium chloride intravenously. This was followed by administering the cortical hormone intravenously in doses of from 5 to 10 cc. once or twice a day. Under this treatment the patient improved greatly. His blood pressure rose to 106 systolic and 58 diastolic. The vomiting stopped, the anorexia disappeared, the urine became normal, and the concentration of blood urea dropped to 33 mg. in each 100 cc. The most marked effects were the improvement in strength and the general sense of well being. The return trip to his home was uneventful and he has been in good condition since.

CASE 7.—A housewife, aged 32, came to the clinic, Sept. 21, 1930, because of weakness and increasing pigmentation of the face. Her husband had died seven years before of bilateral pulmonary tuberculosis. She had had malaria and typhoid in childhood. In 1919 she had had pneumonia, followed by empyema, which had necessitated thoracoplasty. Following this she had again had pneumonia and was in bed for eighteen months. Tuberculosis was suspected, but its presence was not proved. Careful subsequent investigation, including frequent examination of the stool and urine, failed to give any sign of active tuberculosis. Recovery apparently was complete and she enjoyed excellent health for several years. In the autumn of 1929, brownish pigmentation of the skin, particularly marked over the forehead, backs of the hands, axillae, breasts and genitalia, appeared and became progressively more pronounced. At the same time there was generalized weakness, with exhaustion and dyspnea on slight effort. The pigmentation and the weakness became progressively worse. In July, 1930, she had a gastro-intestinal upset, with anorexia, nausea and vomiting, and was forced to stop work and go to bed. In the following three months her condition gradually became worse and she had frequent spells of nausea, vomiting and diarrhea. She was markedly prostrated, and even sitting up in bed made her dizzy. The systolic blood pressure fell from 120 to 80 mm. and there was a loss of 23 pounds (10.4 Kg.). When the patient was first seen she was in a wheel chair, unable to walk because of weakness, and she was moderately dehydrated. There was marked brownish pigmentation of the entire skin, with a few dark freckles on the hands and arms, and some intensification of pigmentation over the forehead, axillae, breasts and genitalia. The skin was smooth and soft in texture and did not show evidence of wrinkling by loss of weight. The pulse was very feeble; its rate was 150. The blood pressure was 82 systolic and 64 diastolic. The heart sounds were distant. Urinalysis gave negative results and the blood count was normal. The concentration of urea in the blood was 40 mg. in each 100 cc. The basal metabolic rate was +5 per cent. Clinical or laboratory evidence of tuberculosis was not found. The patient was tired and exhausted on admission. Rest and free administration of fluids produced slight improvement, and the concentration of urea in the blood fell to 22 mg. Nevertheless, there was no significant change in the general condition. Treatment with the cortical hormone was commenced on the sixth day, and the patient was given a total of 87 cc. in the next five days. The greater part of this material was given intravenously. There was little change for two days, but on the evening of the third day the patient's appetite had improved and she felt a little better. On the fourth day she was able to walk a short distance without undue fatigue. By the fifth day she had lost her anxious expression, was vivacious and was able to run along the hospital corridor without difficulty. Her appetite was excellent; she felt well, and had gained 3 pounds (1.4 Kg.) in weight. When dismissed from the hospital the blood pressure was 100 systolic and 75 diastolic.

The patient has done well since dismissal from the hospital, and has continued to gain in weight and strength. Her color has become progressively lighter, and now is only about a third as dark as before. October 25, she made a 180-mile trip by automobile without difficulty.

COMMENT

The results in these cases convince us of the efficacy of this cortical hormone. The disappearance of anorexia, the increase of appetite to the point of hunger, the gain in weight, and the definite euphoria were striking in all cases. As long as the preparation could be administered, the results were all that could be desired. However, the supply of the preparation has been extremely meager and intermittent, so that it has not been possible to observe the results following consistent dosage and continued administration. Moreover, the first preparation used was not free from epinephrine and was irritating locally. The later supply, however, was almost, if not wholly, free from epinephrine, was suitable for intravenous administration, and was much less irritating when injected subcutaneously. Under ordinary conditions, the intravenous method of administration would seem to be preferable. The usual dose is from 10 to 20 cc. daily in divided doses, but 20 cc. has been given to a patient at one time without any undesirable reaction,

V 96
1931

and as much as 100 cc. has been given intravenously to dogs without any untoward effects. The immediate results in a crisis are excellent. The disease, however, is chronic, and it will be necessary for several years to elapse before a final appraisal can be made of the value of this cortical hormone in Addison's disease. The first three patients had previously been under the Muirhead treatment and all three stated that they felt better when this cortical hormone was given than with any treatment which they had received before.

Rogoff and Stewart have reported the oral use of their suprarenal extract in several patients. Since then, Rowntree and Greene have instituted the clinical use of the hormone prepared by Swingle and Pfiffner, and Hartman has reported on the clinical use of his preparations in one case. Beneficial results were obtained by both Rogoff and Stewart and by Hartman. According to the reports of the latter, large amounts of extract were required, 100 cc. or more a day and the preparations used are considerably less potent than those we are using. In five instances, in the face of a crisis or of an impending crisis, the administration of but 40 to 60 cc. of the hormone we are using, in divided doses, over several days, has at least temporarily restored the patients to apparent health, within a period of from two to five days. The effects last for a period of from one to three weeks. The peak of the improvement is manifest in about a week subsequent to administration, and this is followed by general decline, with active symptoms reappearing in a period of from ten to fourteen days.

The return of appetite and the increase in weight have been the most striking that we have witnessed in our entire experience with this disease. We are inclined to believe that the cortical hormone is as effective in meeting the crisis of Addison's disease as is insulin in diabetic coma. Although somewhat less prompt and dramatic in action, the results are almost equally striking. Danger lurks in every exacerbation. In the cortical hormone we apparently have a reliable remedy. With unlimited supply of the hormone, it is possible that patients may be completely rehabilitated. This, however, is a matter yet to be determined.

This cortical hormone is not yet available commercially. The problem of the preparation of an active, accurately standardized commercial product that will be acceptable to the Council on Pharmacy and Chemistry of the American Medical Association is being studied at present. When this problem has been solved, more accurate appraisal of the therapeutic value and of the indications for the use of this hormone will be possible.

SUMMARY

In addition to most assiduous attention to the details of general care, three forms of treatment are of importance in Addison's disease: (1) the treatment of dehydration, which occurs during the crises, by administration of a solution of dextrose, 10 per cent, and sodium chloride, 1 per cent (this unquestionably is the best form of treatment in crises in the absence of a supply of cortical hormone); (2) the Muirhead treatment, which is effective in a considerable portion of cases and under which a number of patients have survived for a number of years, and (3) administration of the cortical hormone, which is excellent in the crises of the disease, proving effective, as a rule, within from forty-eight to seventy-two hours. Time alone will determine whether this combination of treatment will sustain life and health over a number of years.

PYELONEPHRITIS IN PREGNANCY

ITS TREATMENT AND PREVENTION, BASED ON CYSTOMETRIC CONCLUSIONS *

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Pyelonephritis in pregnancy presents for explanation the questions as to when the organism gained entrance into the urinary tract before or during pregnancy or after delivery; identification of the organism; its source; the pathway of transmission to the kidney; why and how a particular pathway presented itself; the reason for the clinical degree of the disease; treatment and prognosis with their rationale based on the answer to the foregoing questions; and, of still greater importance, the possible utilization of these answers in the prevention of the disease.

Antepartum residual urine is rarely found in primiparas with normal nervous systems, excepting the occasional case of psychic retention or retention due to position in bed. In multiparas, an occasional small residual before delivery might be accounted for by a cystocele.

The bladder in the pregnant woman is distinctive, the bladder wall being markedly resistant to the inflowing water whether or not an infection is present. This produces, on the cystometrogram, a marked sawtooth oscillation of the pen which we feel is due to outside pressure on the bladder inducing a reflex contraction of the bladder wall. This hyperirritability frequently lasts for months after delivery. So far, this oscillating type of curve has been found only in pregnancy, pelvic masses, peripheral neuritis and intramural fibrosis. The muscular resistance is of importance clinically in that it interferes with the delicate balance of the bladder wall and its accommodation to the increasing fluid.

PHYSIOLOGY OF MICTURITION

The cystometer (Rose,[115] Rose and Deakin [116]) is an instrument that measures resistance of the bladder wall under constant filling conditions and differentiates myogenic and neurogenic factors. The cystometrogram is a line showing bladder capacity and associated intracystic pressure along which the sensations, "temperature," "slight pressure," "first desire to void," "fulness," "pain," and the "severe pain" of overdistention, are distributed. We base our conclusions on the points of filling and pressure at which the various sensations occur and their relation to each other.

The myogenic factor of disturbance of the bladder wall may be compared to the heart which, when overworked, first compensates and then decompensates. The neurogenic factor to be considered is the fact that the sympathetics, through the inferior mesenteric ganglion (Ranson [117]), on stimulation dilate the bladder

* From the Departments of Surgery and of Obstetrics and Gynecology, Washington University Medical School and St. Louis Maternity Hospital.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-First Annual Session of the American Medical Association, June 26, 1930.

115. Rose, D. K.: Determination of Bladder Pressure with the Cystometer, J. A. M. A. **88:** 151-156 (Jan. 15) 1927; The Pathogenesis of Bladder Diverticula, Arch. Surg. **14:** 554-563 (Feb.) 1927; J. Urol. **17:** 487-501 (May) 1927. Rose, D. K., in E. A. Graham's Surgical Diagnosis, Philadelphia, W. B. Saunders Company, 1930, pp. 803-819.

116. Rose, D. K., and Deakin, Rogers: Surg. Gynec. Obst. **46:** 221-226 (Feb.) 1928; Am. J. Syph. **13:** 371 (July) 1929.

117. Ranson, S. W.: The Anatomy of the Nervous System, Ed. 3, Philadelphia, W. B. Saunders Company, 1927, pp. 336-356.

wall; that the parasympathetics, on stimulation, contract the wall; that the nervus pudendus, which innervates the external or voluntary sphincter, carries the sensation of a "first desire to void," and that the bladder is an organ with no given capacity except relative to associated sensation.

action of the sympathetics and by a voluntary contraction of the external sphincter (nervus pudendus); if, however, the impulse is not resisted, the external sphincter is voluntarily released; the stream starts slowly with the slight stimulation and distended bladder wall which, in itself, further stimulates the nervus

Postpartum Retention of Urine and Associated Conditions

Case	Gravida	Total Labor	Child's Head Below Ischial Spines	Weight of Child, Gm.	Measurements of Child's Head, Cm.	Morphine-Scopolamine	Forceps	Episiotomy	Residual Urine at First Voiding, Cc.	Duration of Residual Urine	When First Postpartum Cystometrogram Was Done	Residual Urine at Time of Cystometrogram, Cc.	"First Desire to Void," Cc.	Type of Pelvis	Comment	Type of Retention
1. S. H.	I	15¼ hrs.	2 hrs.	3,400	SOF* 11¼ SOB* 11½ BP* 8¼	yes	yes	yes	1,400	7 days	24 hrs.	350	320-450	Funnel	Mild funnel pelvis, head below spines 2 hrs., pressure	Intrapelvic pressure, nerve block N. pudendus
2. R. J.	I	20 hrs.	2½ hrs.	3,615	SOF 11.8 SOB 11.4 BP 8.7	yes	yes	yes	350 (?)	15 hrs.	5 days	None	270-210	Flat, simple	Bladder capacity large (550 cc.), head below spines 2½ hrs., occipital posterior, could cause pressure	Intrapelvic pressure, nerve block N. pudendus
3. M. Ö.	I	15 hrs.	½ hr.	3,100	SOF 12.0 SOB 12.0 BP 9.5	yes	yes	yes	860	9 days	2 days	750	220	Normal	Head below spines only about 30 minutes	Sympathetic overbalance type
4. A. B.	I	5 hrs.	25 min.	3,710	SOF 12.7 SOB 12.2 BP 9.0	no	yes	yes	1,800 300	9 days	3 days	200	130-150	Normal	Very large baby but fast delivery	Sympathetic overbalance type
5. R. S.	I	7 hrs.	2 hrs.	3,360	SOF 10¾ SOB 10¾ BP 9½	yes	yes	yes	1,150	12 days	24 hrs.	1,350	350-380	Normal	Marked molding of head; head transverse and delivered transversely	Intrapelvic pressure, nerve block N. pudendus
6. D. W.	I	11¾ hrs.	1¾ hrs.	3,740	SOF 12.0 SOB 12.0 BP 9.5	yes	yes	yes	200	5 days	48 hrs.	200	200-120	Normal	Large baby, head below spines almost 2 hrs.	Intrapelvic pressure, nerve block N. pudendus
7. J. L.	I	6½ hrs.	3½ hrs.	2,352	SOF 9¾ SOB 9 BP 9	no	yes	yes	775	12 days	6 days	775	None though "F" at 650	Normal	Small baby (premature) with head below spines 3½ hours	Intrapelvic pressure, nerve block N. pudendus
8. T. T.	I	7 hrs. 50 min.	1¾ hrs.	3,100	SOF 11 SOB 8¼ BP 10	yes	yes	yes	800	12 hrs.	12 hrs.	700	230-270	Normal	Sensation delayed though not in proportion to the large residual	Sympathetic overbalance type
9. M. St.	I	18 hrs.	5 hrs. (?)	3,300	SOF 11 SOB 9.6 BP 8.6	yes	yes	yes	800	11 days	9 days	Total ret.	610	Normal	Head deeply engaged approximately 5 hours; large baby	Intrapelvic pressure, nerve block N. pudendus
10. C. B.	I	5½ hrs.	½ hr.	2,795	SOF 10 SOB 9½ BP 8¾	no	no	no	None	.....	9 days	None	Normal	Generally contracted	Very short labor	No retention
11. M. Sc.	I	11½ hrs.	3 hrs.	3,620	SOF 10½ SOB 9½ BP 9	yes	yes	yes	70	No further cath.	24 hrs.	50	230	Normal	Good sized baby normal pelvis, mild pressure (3 hours)	Mild intrapelvic pressure, nerve block N. pudendus
12. F. T.	I	21⅔ hrs.	4½ hrs.	3,180	SOF 10 SOB 9½ BP 9	yes	yes	yes	1,025	13 days	6 days	400	210-260	Funnel	Head below spines 4 hours; Wassermann (+ —); neurologic examination negative	Mild intrapelvic pressure, nerve block N. pudendus
13. E. T.	I	13½ hrs.	1½ hrs.	2,810	SOF 10 SOB 10 BP 9½	no	yes	yes	Not cath.	.....	7 days	1,400	450-none	Generally contracted pelvis; small outlet	No record of catheter though intake exceeds output; small baby but contracted pelvis delayed sensation	Intrapelvic pressure, nerve block N. pudendus
14. I. M.	IV	10 hrs.	1 hr.	3,470	SOF 12 SOB 11 BP 10	yes	yes	yes	None	.....	1 day ante partum	No	Normal	Normal	Cystitis	Multipara, no retention
15. L. H.	III	13½ hrs.	50 min.	3,050	SOF 10.2 SOB 9.4 BP 9.2	no	no	no	None	.....	9 days	No	Normal	Normal	To show normal	No retention

* Suboccipital frontal, suboccipital bregmatic, biparietal.

Sequence in the act of urination is as follows: A given weight of fluid accumulates and causes a very light involuntary contraction of the bladder wall, through the parasympathetics; this stimulates the nervus pudendus (upper posterior urethra) and gives the individual a "first desire to void" (normally occurring near 150 cc. on the cystometrogram); the impulse to void may be resisted at this time through the counter

pudendus and carries on the muscle contraction, which becomes stronger as the bladder wall contracts and thickens.

In pregnancy and at delivery the nervus pudendus offers two places for compression with a resultant physiologic nerve block, one on the inner surface of the ramus of the ischium, and the other on the inferior border of the symphysis pubis. Such a nerve block,

V 96
1931

depending on its extent, can so alter the sensation of a "first desire to void" that a large amount of urine may accumulate in the bladder before instituting sufficient stimulation to notify the individual of a desire to empty the bladder, thus leaving the autonomic

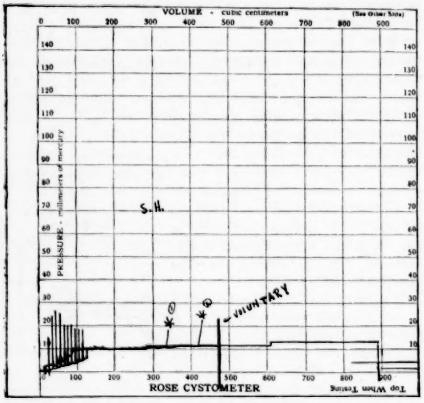


Fig. 1.—Bladder capacity and intracystic pressure twenty-four hours after first postpartum voiding in case 1. This cystometrogram is reproduced entire, but to economize space only the area occupied by the curves is reproduced in figures 3 to 14.

nervous system free from interference and permitting a normal myogenic compensation, the degree of which will depend on its duration. Consequently, not only will the larger amount of urine accumulate as a foreign body, but the patient will be satisfied, from a sensory standpoint, to empty the bladder down to the quantity that is unrecognized by the nervus pudendus. Eventually this residual urine, by its physical presence and by a relative neurogenic obstruction affecting the sensory as well as some of the motor factors, and by a break in the voluntary reflex arc of the external sphincter, will lead to increasing stages of decompensation of the bladder wall and to larger and larger amounts of residual urine.

Such progressive weakness of the bladder wall is not all pathologic for, as capacity increases, the wall is stretched and thinned and its power lessened. This simple condition can be corrected by catheterization.

CYSTOMETRIC INTERPRETATIONS

We have taken cystometrograms before and after delivery and, in some instances, during delivery in the fifteen cases reported here. Thirteen of the patients were primiparas and two were multiparas. Excepting the cases of one primipara and the two multiparas, who had no urinary retention, all cases followed were those showing postpartum retention. Of the twelve cases showing retention, we feel that nine were due to a physiologic block of the nervus pudendus caused by pressure of the child's head on this nerve.

We believe that this nerve block cannot be ascribed to morphine-scopolamine, as the diminished sensation lasts as long as thirteen days.

Forceps were applied in all but two of the fifteen cases reported here. The patients in those two cases had a brief labor. While neither showed retention, the percentage is so small and the use of forceps so general that we do not believe that their use is ordinarily a factor.

Episiotomy we found not to be a constant factor, as it was done in two of the cases in which there was no postpartum retention; and yet in certain instances this operation may have some influence, particularly on the sympathetic overbalance type of postpartum retention. We base this conclusion on the fact that the surface area cut is supplied, or at least reflexly influenced, by the same spinal cord segment as the one that supplies autonomic bladder control and, if this reflex is an inhibitory one to the parasympathetics, there is a sympathetic overbalance. In accordance with our present knowledge of bladder innervation, it is the sympathetics, through the inferior mesenteric ganglion, which, on stimulation, dilate the bladder and are placed in control as a result of such changed innervation. Another possible effect of episiotomy is that the operation may make it painful to initiate voiding by depressing the perineum, which is closely associated with the voluntary initial movement of urination. In our series we have three sympathetic overbalance types of retention.

The principal factor in the temporary nervus pudendus block is not the total duration of labor but rather the length of time the child's head rests on the pelvic floor. According to the relative shape and size of the head to that of the pelvic outlet, it is in some cases in a position to sustain an increased pressure on the pudic nerve at either the tuberosity of the ischium or under the symphysis pubis, or at both of these points. Slower deliveries with greater intrapelvic pressure and abdominal and pelvic muscle resistance are the factors

Developed by Dr. D. K. Rose, Washington University School of Medicine, St. Louis, Mo.

CYSTOSCOPIC DIAGNOSIS Cystitis, sub-acute

Rectal Sphincter Slightly relaxed

Residual Urine 200 c. c.

Temperature Sense normal at 10 c. c. of Fluid — Prostatic Exam.

Slight Pressure Sense none c. c. of Fluid — Size ....

First Desire to Void 350 (1) -- 420 (2) c. c. of Fluid — Shape ....

Sense of Fullness 600 (1) -- none (2) c. c. of Fluid — Consistency .....

Pain 850 (1) -- none (2) c. c. of Fluid

Severe Pain none (1) -- none (2) c. c. of Fluid

Leakage none

Catheter Used Bowmy

Type metal Size 18 French — Urinary Exam.

Held at Angle to Body normal Degrees. — Bacteria B.coli

Cooperation fair — Blood scattered

Emptying Pressures — Pus large amount

First 100 c. c. cut — Urethra

2nd " " " — Infected mildly

3rd " " " — Stricture no

not taken — Relaxed no

Spastic slightly

NAME S.H. Habitus Asthenic Weight 104 Age 17

CYSTOMETRIC DIAGNOSIS Neurogenic bladder, N.pudendus block.

UROLOGICAL DIAGNOSIS Pyelonephritis, B.coli, post-partum.

NEUROLOGICAL DIAGNOSIS Normal Central Nervous System.

By Rollins

Date January 30, 1929.

Mfg. by R. H. Tantrup, 3669 Olive Street, St. Louis, Mo.

Fig. 2.—Reverse side of cystometric chart with record of clinical observations.

causing more frequent nerve blocks in delivery in primiparas than in multiparas.

There is no reason why the two neurogenic factors (1) pressure nerve block, nervus pudendus, and (2) sympathetic overbalance, or reflex mechanism, cannot coexist, one to a greater extent than the other.

REPORT OF CASES

CASE 1.—S. H., aged 17, had a residual urine of 1,400 cc. infected with *B. coli* after the first postpartum voiding. Twenty-four hours later, when a cystometrogram (fig. 1) was made, there was a residual urine of 350 cc. The sensation "first desire to void" was delayed, in the first curve (*1) to 350 cc., and in the second curve (*2) to 420 cc. In curve 1 the oscillations stop at 110 cc., showing either a sympathetic overbalance or a myogenic decompensation secondary to a large residual urine. We believe that in this case there is a mixed type of neurogenic postpartum urinary retention—the delayed sensation due to physiologic pudic nerve block, and the flat, fairly low curve to a sympathetic overbalance. Temperature sense is normal in this case as in all the cases reported here. "Slight pressure" sense occurred at 300 cc., and a sensation of "fulness" (F) at 600 cc., but there was no "pain" or "severe pain." This means that a considerably larger amount of water could have been pumped in. There was no leakage around the catheter with a voluntary pressure of 22 mm. of mercury, which shows that the external sphincter is not relaxed.

Figure 2 shows the reverse side of the cystometric chart, which allows for the recording of clinical data. The cystoscopic diagnosis and the urologic diagnosis of neurogenic bladder are recorded separately as, quite often, we have found that the two do not agree. Whenever this has happened, the cystometric diagnosis has always checked with the neurologic diagnosis.

CASE 4.—In A. B., aged 24, a cystometrogram (fig. 7) taken three days after delivery represents a sympathetic overbalance type of urinary retention with very little disturbance of the nervus pudendus. The chief point in the analysis is that the patient had a residual urine of 1,800 cc. on voiding for the first time following delivery. At the time of the cystometrogram only 300 cc. of this residual urine remained. Sensation of a "first desire to void" was normal, occurring at 130 and 150 cc., respectively, in curves 1 and 2, and other sensations are normal. This was a large baby with fast delivery, the head resting below the spines for only about twenty-five minutes. The large amount of residual urine, 1,800 cc., occurred thirty hours after delivery, and we consider it as due to myogenic decompensation. However, in view of the fact that the patient was catheterized twice, this factor is doubtful and it is probable that she had a transient sensory disturbance which disappeared, leaving a typical sympathetic overbalance type of curve on the third day after delivery.

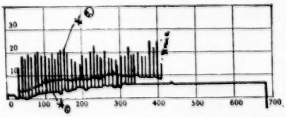


Fig. 7.—Bladder capacity and intracystic pressure three days post partum in case 4.

CASE 14.—I. M., aged 22, was admitted to St. Louis Maternity Hospital four weeks before delivery on account of separation of the symphysis pubis and sacro-iliac strain. A cystometrogram (fig. 12), taken the day before delivery, shows quite normal sensation, an average pressure of 20 mm. of mercury, no oscillations, and a bladder capacity, to pain, of 350 cc. No postpartum urinary retention developed. The cystometrogram shown in figure 13 was made seven weeks after delivery, at which time there was a definite pelvic cellulitis which caused a reflex hyperirritability, with "first desire to void" at 80 and 90 cc., marked oscillations, and a bladder capacity, to pain, of 250 cc.

TREATMENT

The treatment of pyelitis during pregnancy differs greatly from the treatment of postpartum pyelitis. In the former we still have the obstructive and traumatic factors the toxicity of which it is our duty to lessen as well as to protect the general health of the mother and assist pregnancy to term. If the kidney causing the chief symptoms can be located by palpation, an attempt should be made to find a position that will change the location of the pressure of the uterus on the ureter—knee-chest, lying on the opposite side or elevating the foot of the bed, for instance. Should such change of position, assisted by bladder lavage when there is a particularly acute cystitis, fail, an indwelling ureteral catheter may be used. The important factor in determining to use an indwelling catheter is the shape and capacity of the kidney pelvis. If it is small and the major calices are long and narrow, the indwelling catheter, by passing up one of these calices, may cause a relative block of the remainder with, in turn, an exacerbation of symptoms. An indwelling catheter whose end does not pass through the ureteropelvic junction is apt to be worked out by peristalsis. The only type of pelvis which drains perfectly is one in which the common reservoir of all the calices can be drained directly.

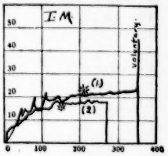


Fig. 12.—Bladder capacity and intracystic pressure the day before delivery in case 14.

We have made it a rule either to do a pyelogram on placing a ureteral catheter or, if one is left in without the type of pelvis being known, to leave orders for its removal on the first suggestion of pain on the side in which it lies. We have never seen a ureteral catheter used in such a manner cause abortion and feel that the lack of drainage is more likely to cause it.

As to lavage, 4 per cent boric acid, physiologic solution of sodium chloride, or sterile water, used from every half hour to every three hours according to the degree of infection, are undoubtedly of greatest value as they cause no chemical irritation and assist in drainage by their quantity and dilatation.

We use the following method of fixing the indwelling ureteral catheter to the thigh: a 2 by 4 inch strip of zinc oxide adhesive tape, with four half inch cuts (transverse to the long axis) through which the free end of the catheter is threaded, is fastened to the abducted thigh. Over this, another 2 by 4 inch strip of adhesive tape is placed, forming a zinc oxide tube for the catheter and, by being placed on the thigh in abduction, preventing displacement of the eye of the catheter on subsequent abduction.

The amount of absorption and the degree of dilatation of the ureter and pelvis will determine the duration of the inlying ureteral catheter drainage as well as the size of the catheter used—from a 4 to a 7 French.

The urinary antiseptics by mouth which are in general use at the present time are all of value but, in our opinion, should be rotated after any one has been used for a time.

Forced fluids are used with all urinary antiseptics.

TREATMENT OF POSTPARTUM PYELONEPHRITIS

The treatment of postpartum pyelonephritis or the pyelonephritis of pregnancy carries many of the foregoing considerations but obviously varies in that we are dealing with an ordinary pyelonephritis plus a retention in pelvis, ureter or bladder and, in some instances, a change in the innervation of the bladder.

The first consideration is to determine whether or not there is a bladder retention and, if so, the amount.

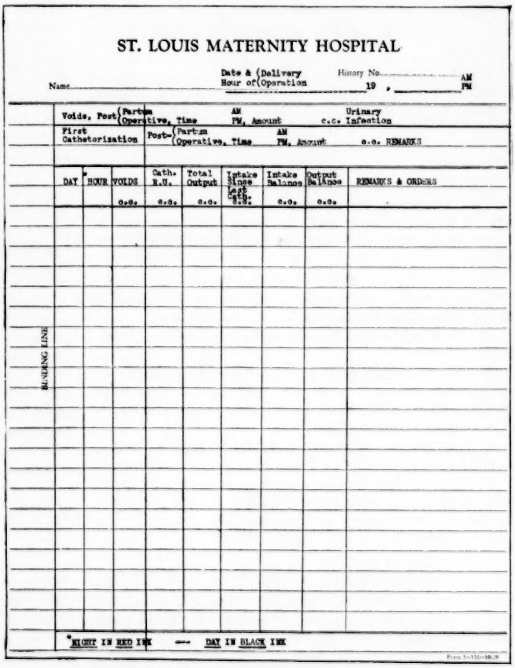
V 96
1931

If this is large, the cystometric work suggests that it will continue from twenty-four hours to two weeks, depending on the change in the innervation of the bladder. With a large residual urine, it would be folly to drain the ureter and the pelvis. Rather, constant bladder drainage to overcome the urinary stasis is indicated.

The difficulty in handling residual urine lies in the fact that the patient is not conscious of fluid in the bladder and that, in a myogenic breakdown of the bladder, this can continue while the patient is voiding good amounts. In fact, the voiding of occasional separate large amounts, up to 900 cc., suggests myogenic decompensation and an increasing residual urine.

We have evolved and present the accompanying chart (fig. 15), feeling it necessary in the study and control of bladder residual urine in the pyelonephritis of pregnancy, and hoping that its principle will be of benefit in reducing the necessity for ureteral catheterization, shortening the duration of an established infection and preventing pyelonephritis secondary to a primary cystitis in the urinary infection of pregnancy. After the date and hour of delivery, note is made of the time and amount of the patient's first voiding and of whether or not the urine is infected. If the amount voided is small and suprapubic dulness is present, time is lost in not catheterizing and recording the first catheterization, hour, amount, character of urine and remarks. When in doubt one should catheterize, as little harm is done if no residual urine is present. The amount of urine voided plus the catheterized urine now constitute the total output. In the next column the intake since the previous catheterization is entered. The difference in amount between the intake and output is the intake or output balance. If the intake balance is large, it is advisable to catheterize early, possibly in three or four hours; if it is small, in from six to eight hours. The process is repeated each time the patient is catheterized, the output balance and the ratio of residual urine to the amount voided being allowed to decide the time for the succeeding catheterization. As the catheterized residual urine diminishes, the time between the catheterizations lengthens, provided, of course, the intake balance does not mount. If the ratio of catheterized residual urine to the voided amount remains constantly large or increases, the time between catheterizations diminishes even to the point of a retention catheter. Night and day records are kept separately, so that the ratio of day to night output is obtained.

The importance of such a chart, if followed properly, is that at no time will there be a high intracystic pressure and the resistant bladder wall of pregnancy with a large bladder capacity to serve in initiating or maintaining a pyelonephritis and increasing the degree of cystitis. If a retention urethral catheter becomes necessary, or the residual urine disappears, the urinary chart may be discontinued. On removal of the retention catheter, however, the chart should be started again to determine the exact status of bladder function and whether the residual urine has permanently disappeared.



ST. LOUIS MATERNITY HOSPITAL

Name _____ Date & Hour of (Delivery / Operation) _____ History No. _____ 19 _____ AM / PM

Voids, Post (Partum / Operative), Time _____ AM / PM, Amount _____ Urinary c.c. Infection _____

First Catheterization _____ Post (Partum / Operative), Time _____ AM / PM, Amount _____ c.c. REMARKS _____

DAY	HOUR	VOIDS c.c.	Cath. R.U. c.c.	Total Output c.c.	Intake Since Last Cath. c.c.	Intake Balance c.c.	Output Balance c.c.	REMARKS & ORDERS

NURSING NOTES

*RIGHT IN RED INK — DAY IN BLACK INK

Fig. 15.—St. Louis Maternity Hospital postpartum urinary chart.

PREVENTION

Pyelonephritis during pregnancy, when organisms without symptoms are found in the bladder, can be prevented only by general care to raise the resistance of the patients, etc.

Postpartum pyelonephritis with a secondary cystitis may be prevented in degree by recognizing the type and amount of urinary stasis, removing it and allowing for complete return of myogenic and neurogenic function before discontinuing ureteral or bladder drainage.

Uncomplicated postpartum pyelonephritis secondary to a primary cystitis can be prevented if every patient is followed with a urinary chart showing the ratio of retention to the amount voided.

SUMMARY

Our answers to the questions propounded in the introduction are as follows:

I. When the organism has gained entrance to the urinary tract:

1. Before pregnancy:

(*a*) The pyelonephritis of infancy may be continued, with markedly attenuated organisms, throughout life, the exacerbation being associated with the trauma and urinary retention incident to pregnancy and delivery.

(*b*) The pyelonephritis of adulthood, from which the patient recovers clinically but which, again, may or may not exacerbate depending on trauma, urinary retention, general condition of the patient, bacteriologic

conditions, and possibly some preexisting factor originally responsible for the infection.

2. During pregnancy:

Influencing factors such as myomas, pelvic adhesions, cystocele, size, shape and position of the uterus and its relation to the shape of the bony pelvis with resultant pressure or pull on the ureter, and changes in bladder and ureteral walls, may cause urinary retention in pelvis, ureter and bladder and so invite infection.

3. After pregnancy:

The association of a specific postpartum type of spastic bladder wall, described cystometrically as an oscillating curve, associated with urinary retention, renders more probable a serious clinical degree of pyelonephritis by way of either the lymphatic or the hematogenous routes and, given a particular type of ureteral orifice, practically assures an ascending ureteral lumen infection.

II. Identification of the organism:

Of importance in associating vaginal and urinary organism (the anaerobic streptococcus causing specific pathologic possibilities) and assisting in identifying the source of the organism, whether colon, skin or some other point.

III. Pathway of transmission of the organism:

The lymphatic, hematogenous and ascending routes are all of importance and, in many instances, one or more routes may be associated in the infection of the kidney.

IV. Reasons for the clinical degree of the disease:

1. Preexisting pathologic condition or infection in the genito-urinary system.

2. Consideration of the bacteriologic laws of infection.

3. The resistant pelvic and abdominal muscles in primiparas causing more frequent nervus pudendus injuries than is the case in multiparas, as shown by cystometric examinations.

4. Sympathetic overbalance (reflex) type of retention occurring equally in primiparas and multiparas.

5. The fact that bladder retention in association with the postpartum neurogenic bladder is the principal factor in continuing and exacerbating postpartum pyelonephritis.

V. Treatment:

Proper management of residual urine in the bladder can be accomplished only with the aid of a chart of the type shown. The St. Louis Maternity Hospital postpartum urinary chart records the total fluid intake, urinary output and the ratio of the amount of urine voided to the amount retained. These points indicate the type of treatment, that is, a retention urethral catheter or intermittent catheterization or cystoscopic examination and pyelogram and an indwelling ureteral catheter when the bladder function has returned to normal and the symptoms persist. Positional and psychic bladder retention factors must be recognized and treated.

A retention ureteral catheter may occasionally be indicated if the kidney pelvis is known to be of a shape to lend itself to complete drainage, but intermittent ureteral catheterization is rarely indicated and frequently does more harm than good. When there is only the relative obstruction of mild ureteral and pelvic dilatation and the neurogenic bladder retention (whether due to injury to the nervus pudendus or to a sympathetic overbalance), continuous bladder drainage is sufficient. It decreases the likelihood of reinfection of the kidney by diminishing any multiplication of organisms in the bladder and breaking down the chain of factors that favor transmission of the organism to the pelvis by way of the ascending ureteral lumen, hematogenous or lymphatic routes.

Forcing fluids and urinary antiseptics, locally and by mouth, are of value.

Pyelograms may occasionally be necessary to determine preexisting genito-urinary disorder, the degree of ureteral and pelvic dilatation as an excessive degree may require a retention ureteral catheter, and the type of pelvis suitable for continuous ureteral catheter drainage.

VI. Prognosis:

This depends on the type and extent of the nerve injury suffered during pregnancy or delivery, preexisting genito-urinary disorders, the time of onset of the infection and the time elapsing between the onset of an acute inflammatory reaction of the urinary mucosa and the institution of free urinary drainage.

VII. Prevention:

The cystometer differentiates two types of neurogenic postpartum urinary retention, one due to pressure of the child's head on the nervus pudendus in the second stage of labor, and the other, a reflex type due to dilatation and trauma to the outlet. Episiotomy is probably a factor in the latter type of retention. However, the sympathetic overbalance or reflex type of retention is of lesser importance—usually of short duration and easily handled by proper drainage of the bladder.

The former, or mixed, type is of great importance as a spastic or resistant bladder wall develops along with the urinary retention and infection. Bladder drainage properly instituted and maintained to the point of return to the normal physiologic condition of the organ will prevent a degree of infection dangerous to the mother and one most likely to continue a chronic pyelonephritis. Such drainage will cause a cystitis but will prevent a pyelonephritis in cases showing bladder retention with or without a precatheterization infection. In addition, it diminishes moderate forms of ureteral stasis and lessens the danger of infection or reinfection of the ureter from the bladder.

VIII. Suggestions as to delivery are as follows:

The second stage of labor should be terminated (Schwarz[139]), provided it lasts more than two or three hours and when the greatest diameter of the head is within the pelvis, depending on factors such as the size of the child, shape of the pelvis, and habitus of the mother. Episiotomy may cause a reflex type of retention which is comparable to that seen with hemorrhoidectomy, but it occurs in only a small percentage of cases and need not be considered from the standpoint of urinary retention. Forceps and morphine-scopolamine appear to exert no direct influence on urinary retention.

ABSTRACT OF DISCUSSION

DR. H. D. FURNISS, New York: The authors, through the use of the cystometer, have given a good idea of the mechanism of urination, and they have helped to explain many of the conditions that are encountered. But I doubt that it will come into general use. The anesthesia from pressure on the pudic nerve in which the bladder does not respond until it reaches a capacity above normal is an item in the retention of urine. Frequently these patients will empty the bladder down to the

139. Schwarz, Otto: Personal communication to the authors.

V 96
1931

point at which sensitiveness is lost—to the point of anesthesia. I believe that there are several methods of infection. There is a good deal more to the ascending infection than is generally believed, though most urologists feel that an ascending infection is relatively rare except when there is marked obstruction. I notice that in cases in which there has been irritation of the bladder for any reason, or infection, an increased intravesical pressure develops, and for the want of a better name I have spoken of it as a dynamic obstruction. In treating cystitis and observing patients over a number of years, I have seen cases in which ureters that were normal become dilated, soft and patulous; and when the condition is relieved, I have seen this dilatation disappear. In tuberculosis of the bladder, this dilatation is seen often in the ureter of the healthy kidney. When the person has either residual urine or inability to void, or when that person has a cystitis and increased intravesical pressure, the chances of infection are greater through the result of back pressure. During infancy pyelitis there is a round cell infiltration of the ureteral walls that later on goes to definite stricture. Dr. Cummings has some roentgenograms that illustrate nicely the effect of previous inflammation on the ureter and its walls. In an ordinary pyelogram, the kidney may appear perfectly normal, but in a series of pictures, one every second for thirty seconds or so, marked disturbance of the function of the pelvis may be shown. I think that that is the type of case that later on is apt to develop an infection during pregnancy. My practice has been to catheterize the patient as often as she feels uncomfortable for she then has an intravesical pressure and needs it. The nurse will often say that it has been only three hours since she voided, and one has to make the nurse understand that when the patient has a sensation of fulness that particular bladder is full, even though the amount may be only 1 or 2 ounces.

DR. ARTHUR H. CURTIS, Chicago: I wish to point out that the vital factor here is residual urine and that the patient should be catheterized as often as is necessary to give comfort.

DR. D. K. ROSE, St. Louis: Dr. Rollins and I feel that catheterization on desire is rather dangerous as there is an anesthetic bladder, which means that the desire to void is delayed and, in the presence of a hypertonic bladder wall with a marked infection, the sudden release of pressure is apt to cause petechial hemorrhages into the mucosa, which, in association with the bladder pressure found in pregnancy and the puerperium, may contribute to a pelvic infection. As to catheterization at stated periods versus the indwelling catheter: When the bladder wall surrounds 500 cc. of fluid, it is the same wall as when it contains only 100 cc.; but the bladder wall surrounding 500 cc. is, of course, thinned and weaker, whereas the wall of the empty bladder offers high resistance to subsequent fillings. If, then, such a bladder is catheterized and so strengthened as is often done, a partially anesthetic, spastic bladder wall has been left which, under these conditions, has to overfill before a desire to void is felt. This is the important point in employing the urinary chart. As soon as a residual urine is found or returns after having disappeared, we advise the catheter, putting it back soon and leaving it in until the nerve damage is corrected by time. The greatest multiplication of organisms occurs in the bladder. As with cloudy bladder urine the catheterized pelvic urine will frequently be clear, it is important to lessen the bladder infection by continuous treatment, as it can be a factor in continuing the pyelonephritis.

Syphilis and Angina Pectoris.—Active syphilitic lesions of the larger coronary branches are infrequent. They rarely produce occlusion of the vessel, or lead to thrombosis or myocardial infarction. Arteriosclerosis of the coronaries, coronary occlusion, coronary thrombosis, myocardial infarction and angina pectoris are more frequent in the latent syphilitic than in the nonsyphilitic. Syphilis predisposes secondarily to coronary and aortic sclerosis and their resultant cardiac pathology. Sudden cardiac death was almost five times as frequent in the syphilitic as in the nonsyphilitic autopsies. In the majority of cases this was due to cardiac insufficiency and dilatation, resulting from a diffuse interstitial myocarditis of slight degree, leading eventually to fibrosis.—Warthin, A. S.: The Rôle of Syphilis in the Etiology of Angina Pectoris, Coronary Arteriosclerosis and Thrombosis, and of Sudden Cardiac Death, *Am. Heart J.*, December, 1930.

HEREDITARY DIABETES MELLITUS

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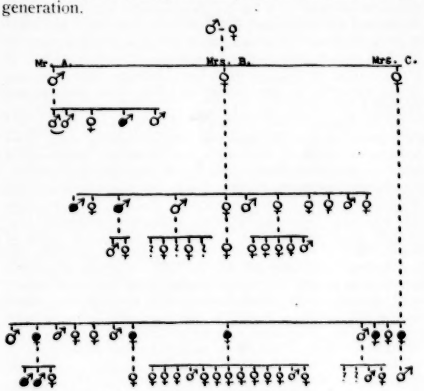
I have had the opportunity to study a family in which ten cases of diabetes have occurred in two generations.

The first generation consisted of twenty-eight persons, the children of Mr. A, and of his two sisters, Mrs. B and Mrs. C. Five were children of Mr. A; eleven, of Mrs. B; twelve of Mrs. C. Three persons were lost trace of more than thirty-five years ago. Of the remaining twenty-five, eight developed diabetes, while seventeen did not develop diabetes; eleven are now living, fourteen have died. Of the eleven living, four have diabetes and seven are free from the disease. Of the fourteen dead, four died of diabetes, while ten died from other causes, four in infancy. In this generation there have been five amputations of a leg for diabetic gangrene; three of the patients who underwent amputation are living, two have died of diabetes. Information is lacking for only three members of this generation.



Incidence of diabetes in Families A, B and C.

In the second generation, thirty-five persons were studied. Thirteen were the grandchildren of Mrs. B; twenty-two were the grandchildren of Mrs. C. So far, only two of this generation developed diabetes. Twenty-four of the thirty-five are living, one with diabetes, twenty-three free from the disease. Eleven are dead; one died of diabetes, ten died of other causes, five in infancy. Three of this generation died of tuberculosis. Information is lacking on none of this generation, except as to such children as the three untraced persons of the first generation may have had.

Of the original brother and two sisters, from whom these three branches of the family sprang, there is reason to suspect diabetes in only one, Mrs. C. Her death took place in 1896, when much less was known about this disease than now. Her age at death was 71 years. According to the account given by her family, she had leg ulcers for several years previous to her death, and for several months she had had sore toes. She had also lost a great deal of weight. Her last illness began with a cold; vomiting set in, and she went into coma and died in three or four days. At the time,

her condition was diagnosed "typhoid pneumonia." The description is almost typical of acidosis and I feel reasonably sure that she died of diabetes; but I do not include this case in my record, as it was not diagnosed diabetes by any physician at any time. I have no information on the family any further back, nor do I know anything about diseases in the families into which the members married.

A study of these three related families separately reveals the following:

FIRST GENERATION

The A Family: Mr. A and his wife died more than thirty-five years ago. His age at death was 81; hers, 75. They had five children. Two of the four sons and the daughter removed to California more than thirty-five years ago and I have been unable to find any trace of them. One son developed diabetes at the age of 45. A leg was amputated for gangrene when he was 51, and he died four years later of diabetes. Another son died of pneumonia at the age of 41. Neither of these sons married.

The B Family: Mrs. B died at 81, her husband at 68. They had eleven children. Three died in childhood, at 7 years, 3 years and 1 year, respectively. Of the remaining eight, two brothers died of diabetes, one in 1911, at the age of 70, following amputation of a leg for gangrene, the diabetic origin of which was not discovered until after the operation; the other, in 1906, exact age not known, after an operation for carbuncles. He had had diabetes for several years. A sister died at 78 and a brother at 63, both free from diabetes. The four surviving members of this family are free from diabetes and in good health at the ages of 82, 79, 76 and 69, respectively.

The C Family: Mrs. C died at 71; her husband, at 61. I have given reasons for suspecting that she had diabetes. They had twelve children, five of whom developed diabetes. A daughter died of diabetes at the age of 63. The four remaining diabetic members of this family, all women, are living. The eldest, aged 72, discovered that she had diabetes when she was 53. Seven years later, a leg was amputated for diabetic gangrene. She is now doing well on 12 units of insulin daily. A sister, 66 years old, has known that she had diabetes since she was 42. In 1928 a leg was amputated for diabetic gangrene. She is getting along well on 9 plus 3 units of insulin daily. A third sister, who had a leg amputated for diabetic gangrene, is now 62 and has had the disease since the age of 46. She keeps in good condition on 6 plus 6 units of insulin a day. These three women are my patients.

The fourth living diabetic sister is 71; she had a mild type of the disease for several years when, in October, 1930, I was called to see her in consultation. Two weeks previously, she had had an infection in the leg. She was at the time a perfect picture of acid intoxication and diabetic coma. She was unconscious. For several days she had been vomiting. Diarrhea also had persisted for days. There was complete anuria. She had passed no urine for many hours. She had so little liquid in the body that the muscles almost disappeared on a light touch. The eyeballs were soft; the skin, dry. Hyperpnea was present. The pulse was so rapid that it was impossible to count it. The temperature was rapidly falling below normal. The blood pressure was so low that it could not be measured. Insulin was administered immediately (about 8:30 p. m.) together with carbohydrate, and this treatment was continued throughout the night. Twelve hours later the vomiting and diarrhea had greatly improved. The blood pressure had come back sufficiently to permit the taking of a specimen of blood, and the kidneys were acting. She recovered and, I understand, is now in her usual health.

Of the seven nondiabetic members of this family, one died in infancy, two sisters died of cancer at the ages of 66 and 59, respectively, and a brother died of cirrhosis of the liver, aged 55. Three are living and well at 81, 69 and 64 years, respectively.

SECOND GENERATION

The B Family: This branch supplied thirteen persons to the second generation. Of the two diabetic patients in the B family, both married; one had no children, the other had two children, a daughter living and well at the age of 58 and a son who died of tuberculosis at the age of 60. Eleven children were born of the nondiabetic persons. Three died in infancy. Two (children of different parents) died of tuberculosis at the ages of 28 and 25, respectively. Six are in good health, three of these being over 50 years of age.

The C Family: Twenty-two members were supplied to the second generation by this branch. Eighteen were children of four diabetic patients. The remaining four were born to a nondiabetic brother, now living; two of these died in infancy, two are living and in good health at 26 and 23 years, respectively. One of the diabetic sisters now living had thirteen children, none of whom became diabetic; one died from typhoid, another from a surgical operation; of the remaining eleven, the oldest is 51, the youngest 26. Two of the sisters who underwent leg amputation for diabetic gangrene have one child each; these are 49 and 26 years of age, respectively, and are in good health. The sister who died of diabetes at 63 had three children: a son developed diabetes at the age of 38 and is living at 46 years of age; another son developed the disease at 40 and died ten years later; a daughter is living and well at 40.

I have spared no pains to be absolutely sure of the accuracy of this information in every respect.

In this series there were no cases of diabetes in children or young persons. In none of the ten cases did the disease run a rapid course. The first generation, at any rate, were notably long-lived. All the diabetic patients were overweight.

COMMENT

It is clear that the branch of the family descended from Mrs. C, who herself probably had diabetes, has been the hardest hit by the disease. In addition to the fact that five of the eight cases in the first generation occurred in this branch, it contains the only two cases that have so far appeared in the second generation. Two deaths from cancer also occurred in this branch.

In the second generation of the B family, on the other hand, there have appeared three cases of tuberculosis in the children of different sets of parents. The appearance of cancer or tuberculosis in the same family with diabetes has been noted by others. Solis-Cohen[1] believes that there is an antagonism between tuberculosis or cancer and diabetes, that when they appear in descendants of a common stock they are manifestations of antagonistic tendencies, and that the natural reactions against tuberculosis or cancer, when in excess, predispose to errors of carbohydrate metabolism. Landis,[2] on the other hand, cites a family with a strong tuberculous and cancer history in which five of the ten grandchildren had diabetes and two of these also had tuberculosis.

The question of heredity in diabetes is not clear. As yet there are not sufficient data to justify definite statements. In the first place, all questions of human heredity run up against the obstacle that a complete account of a family in all its branches is seldom available for more than two or three generations, and observations on rapidly breeding animals and on plants show the inadequacy of studies, however complete, that are limited to so small a number.

A special obstacle to the student of human heredity in disease, moreover, is that, in the case of a large number of diseases, strict differentiation was not possible until the application of modern methods of diagnosis. Diabetes mellitus is one of the diseases to which this observation particularly applies. In those cases, there-

1. Solis-Cohen, Solomon, in discussion on Landis (footnote 2).
2. Landis, H. R. M.: Familial Diabetes, Tr. A. Am. Physicians **36**: 293, 1921.

V 96
1931

fore, in which one may have the good fortune to possess information extending back beyond the third generation, one is dealing with two uncertainties, family tradition on the one hand and, on the other, a diagnosis of diabetes made without blood sugar determination.

Inadequate as such records are, they are, nevertheless, the material with which the student of heredity in human disease must work, and the work is so important that it cannot be put off because the material is and for a long time hence must remain incomplete. The question of heredity in diabetes is of immediate practical interest to those practitioners who have the responsibility of guarding the health of members of families in which the disease has appeared with noticeable frequency.

A tendency for diabetes to run in families has been noticed by medical authors since early times. In 1696, Richard Morton [3] mentioned four children in a family of seven who became diabetic at the age of dentition, and not a hundred years later Isenflamm [3] reported a family of seven children of healthy parents, all of whom developed diabetes at the age of 8 or 9 years. Heiberg [4] questions whether the disease in this case was diabetes mellitus and not diabetes insipidus. In 1798, Storer [5] cited a case in which the disease appeared in a father, two children and a grandchild. Numerous instances of diabetic families were published in the last half of the nineteenth century, such as those reported by Fardel [3] (father and mother, three daughters and grandson), Mosler [3] (father and mother, two daughters and grandson), Roberts [3] (eight children in one family), Pavy [3] (maternal grandmother, mother and her four children) and Frew [6] (grandfather, uncle, aunt and 9 months old infant.

In modern times notable diabetic families have been recorded with a greater effort to investigate all the members of each generation in as many branches as possible. Thus, Hansen [6] is able to tell of a family in which the disease skipped three generations in direct descent but appeared in collateral lines in two of these skipped generations. He records another family in which there were six cases of diabetes in two generations comprising a total of only twelve persons, two of these dying in infancy without having developed the disease. In a third family there were ten diabetic patients in twenty-three persons representing three generations. In another place [7] he publishes an account of eight cases of diabetes in fifteen persons of three generations; six of the members of the family who are included among those free from the disease died between 2 and 4 years of age, so that only one member of this family grew up and remained free from diabetes.

Joslin [8] reports a family of twelve brothers and sisters, all of whom had diabetes; all except one had died of the disease at the time the account was published. Two of the sisters each had a child with diabetes. A second remarkable instance of familial diabetes is recorded by Joslin in a Jewish family; seven brothers and sisters and a niece developed diabetes, two died of the disease, and three were dead of other causes, having had the disease for many years. The niece developed diabetes at the age of 20 and has now had it for eighteen years. In Joslin's experience, hereditary diabetes is mild, even in young persons.

In the family history published by Pribram,[9] covering four generations, the maternal great grandfather had questionable diabetes. His two children had diabetes. One of these had nine children; three have the disease, one has been lost sight of, and one died in infancy. In this family, symptoms first appeared in the forties. In the fourth generation the disease has not yet made an appearance.

A striking instance of direct double transmission is given by Heiberg:[10] The paternal grandfather and grandmother and the father and mother had diabetes; the two children both developed diabetes but in spite of this intensified diabetic heredity survived the onset of symptoms for twelve years, dying at the age of 42.

In three generations of a pioneer family, living frugal lives, but of the obese type, Long [11] found eight cases of diabetes in three generations; the number of persons in the three generations is not shown.

Pleasants [12] became interested in the family of a woman who had come to this country from Germany. Her brother is said to have died of diabetes and her father had diabetic descendants through both his wives, though he himself lived to the age of 88 and was probably without the disease. Pleasants examined the urine of all but one of this woman's twenty-four descendants. A son, age 28, had diabetes; two grandsons, aged 20 and 16, respectively, had symptoms of diabetes of one year's standing; two granddaughters, aged 16 and 10, were now found to have the disease.

Fitz [13] publishes the family tree of a man who married two diabetic wives and had diabetic children and grandchildren by each wife and one diabetic grandson, in all, thirteen diabetic descendants. His brother had fifteen children and among all their descendants there has been no known case of diabetes.

In a family reported by Neumann,[14] the grandparents (one line only is mentioned) were healthy and long lived, but of the eighteen children and grandchildren, four died in early years and six of the remainder had diabetes.

Allen and Mitchell [15] publish an account of a family in the mountains of South Carolina, the value of which is heightened by thorough knowledge of the ancestry and relatives for several generations. There was no history of inbreeding and none of the usual predisposing causes of diabetes were present. Eight cases of diabetes occurred in two generations. No previous cases are known in the family. A brother of a family of six persons died of diabetes. His brother had fourteen children, of two mothers, seven of whom became diabetic. In general, the diabetic heredity in these children was manifest in those who most closely resembled the father in coloring (dark complexion, black hair and blue eyes). Those resembling the mother, a blond with flaxon hair, have so far escaped. In the family reported by Landis,[2] likewise, it was the

3. Cited by Foster (footnote 20).
4. Heiberg, K. A.: Om den arvelige Disposition til Sukkersyge, Hospitalstid. **5**: 325 (March 20) 1912.
5. Cited by Pleasants (footnote 12).
6. Hansen, Søren: Ueber die Vererbung von Diabetes Mellitus, Acta med. Scandinav. **62**: 85, 1925.
7. Hansen, Søren: Sukkersygens arvelighed, Ugesk. f. laeger **86**: 341 (April 17) 1924.
8. Joslin, E. P.: The Treatment of Diabetes Mellitus, Philadelphia, Lea & Febiger, 1928.
9. Pribram, Hugo: Ueber die Vererbung der diabetischen Konstitution, Zentralbl. f. inn. Med. **36**: 328 (May 22) 1915.
10. Heiberg, K. A.: Bemerkungen zum erblichen Diabetes, Deutsche med. Wchnschr. **42**: 255 (March 2) 1916.
11. Long, F. A.: A Contribution to the Study of the Familial Aspects of Diabetes Mellitus, Western M. Rev. **19**: 30 (Jan.) 1914.
12. Pleasants, J. H.: Heredity in Diabetes Mellitus, Bull. Johns Hopkins Hosp. **11**: 325 (Dec.) 1900.
13. Fitz, Reginald: Diabetes Mellitus, Oxford Medicine, Oxford University Press **4**: 131.
14. Neumann: Familiärer Diabetes, Deutsche med. Wchnschr. **42**: 1053 (Aug. 24) 1916.
15. Allen, F. M., and Mitchell, J. W.: A Case of Hereditary Diabetes, Arch. Int. Med. **25**: 648 (June) 1920.

brunettes who were attacked and the blonds who escaped; here both parents were brunettes; the source of the diabetic tendency in this family is not clear. Barach [16] believes that a light complexion is characteristic of diabetic patients.

A number of authors have noted a tendency for diabetes to appear at a similar age in two or more children of the same family. In the case reported by Lereboullet and the Blechmanns,[17] a boy died of diabetes at the age of 7 and his sister at the age of 9; the second child's diet had been carefully watched and her urine frequently examined. Lion and Moreau [18] record a case in which a child showed the disease at the age of 5; during her illness, which lasted a year, a brother was born who developed diabetes at the age of 3. They cite Gordon's family; two children, 3 and 4½ years old, with the disease, the mother diabetic, the father neuropathic. Neuropathic conditions and mental diseases have frequently been noted in the ancestry of diabetic patients. A remarkable similarity in the course of the disease in two brothers is related by Bordot: [19] it developed simultaneously in the two children, aged 11 and 6 years, ran the same course, with the same quantities of sugar, albumin and acetone in the urine in each case, and the children died under the same circumstances within six weeks of each other, after about one year's illness. The older child had been delicate since infancy, which had necessitated a strict diet, but the younger child had been healthy. Two interesting families are reported by Foster.[20] In one, two sons of a diabetic father died of the disease, one at 18, the other when a medical student, age not given; a third son first showed sugar in the urine at 17; it disappeared, to reappear nine years later, but only on occasions of alcoholic excess. In the second family there was no diabetic tendency known in the parents or grandparents, but four children died of diabetes between the ages of 6 and 17. Death occurred from one week to one year after the appearance of symptoms, the course of the disease decreasing in rapidity with the age of the child attacked. Langaker's case is cited by Foster: five out of eight brothers and sisters, with healthy parents and grandparents, succumbing to diabetes between the ages of 4 and 11 years.

A study of diabetes in twins was recently published by Curtis.[21] He reports six instances and cites seven more from the literature. In several cases the disease appeared simultaneously in the two twins; in one case there was an interval of forty-eight years. Statistics brought together by Curtis suggest a higher incidence of diabetes in twins than in persons born singly. Furthermore, the existence of diabetes in twins points, Curtis remarks, to an hereditary background.

That diabetes, inherited from the mother, may develop in utero is indicated by two cases that have recently appeared in the literature. Ambard and his co-workers [22] found 1.2 per cent of sugar in the urine of the new-born infant of a mother with recent grave diabetes. In the mother's pancreas, the islands were abnormal. The infant's pancreas showed high-grade atrophy, but the lesions were limited to the exocrine gland. Feldmann [23] found sugar in the urine of a mother who died with symptoms of cardiac weakness in the last month of pregnancy, and the urine in the bladder of the dead fetus gave a still stronger sugar reaction than did the mother's. In the mother's pancreas there were changes suggestive of toxic injury from products of abnormal metabolism. The child's pancreas showed extensive interstitial pancreatitis and hydropic swelling with edema of the islands.

In general, however, as Hansen [6] points out, it is not the disease itself but a defective condition of the islands of Langerhans that is inherited. His theory is that a number of factors are necessary to produce enough deficiency in the pancreas to result in diabetes, and that the greater the number of such factors present, the earlier the appearance of the disease and the graver its nature. His explanation of the fact that sometimes a parent develops the disease at the same time or later than his child or shows only latent diabetes at the time that his child is having the disease in its gravest form, as in cases reported by Wegeli [24] and by Neumann,[14] is that in the child additional factors are present, inherited from the other side of the family. This is also his explanation of the greater severity of the disease in childhood; the disease is not severer because the patient is a child, but it develops in childhood because the inherited deficiency is greater.

A number of investigations have been carried out on apparently healthy members of diabetic families. Sherrill [25] tested forty relatives of twenty-three diabetic patients for dextrose tolerance. In twenty-one of the forty, diabetes was discovered by this test. He gives a complete table showing the amounts of sugar in the blood at various intervals after administration of the dextrose. The ages of the tested persons ranged from 3 to 54 years. Dounévitch [26] made tests on forty persons, aged from 9 months to 35 years, who were the children, grandchildren or nephews of diabetic patients and represented twenty-five families. He found fasting hyperglycemia in 17.5 per cent of these persons. After a test meal, the average alimentary hyperglycemia was 1.42 per thousand as against 1.14 per thousand, the average for a group of normal persons. The absolute increase in blood sugar at the end of one hour averaged 0.29 per thousand in the diabetic family group as against 0.17 in the normal group; at the end of two hours, 0.12 in the diabetic family group, while it had disappeared in the normal group. In the fasting values, the difference between the diabetic family average and the normal group average was 0.188 per thousand, maximum 0.73. The index of relative hyperglycemia, found by dividing the alimentary glycemia by the fasting glycemia, was higher in the diabetic family group than in the normal group. Lorand [27] tested ten children of seven diabetic parents and found alimentary glycosuria *ex amylo* in eight after a meal containing from 250 to 300 Gm. of carbohydrates. Jarløv and Kraunsøe [28] investigated a family in which permanent, occasional or

16. Barach, J. H.: Constitutional and Hereditary Traits in Diabetes, Am. J. M. Sc. **172**: 243 (Aug.) 1926.

17. Lereboullet, P.; Blechmann, G., and Blechmann, J.: Un cas de diabète infantile familial à marche rapide, Arch. de méd. d. enf. **25**: 94 (Feb.) 1922.

18. Lion, G., and Moreau, C.: Diabète infantile familial, Arch. de méd. d. enf. **12**: 21, 1909.

19. Bordot, Enrique: Diabetis infantil familiar, Arch. latino-am. de pediat. **3**: 340 (Oct.) 1907.

20. Foster, N. B.: Consanguineal Diabetes Mellitus, Bull. Johns Hopkins Hosp. **23**: 54 (Feb.) 1912.

21. Curtis, W. S.: Diabetes in Twins, J. A. M. A. **92**: 952 (March 23) 1929.

22. Ambard, Mercklen, Schmid, Wolf and Arnovljevitch: Diabète grave chez une femme enceinte et diabète congénital chez l'enfant, Bull. et mém. Soc. méd. d. hôp. de Paris **49**: 547 (April 3) 1925.

23. Feldmann, Ignatz: Diabetes intrauterina, Centralbl. f. allg. Path. u. path. Anat. **42**: 435 (June 10) 1928.

24. Wegeli, cited by Lion and Moreau (footnote 18).

25. Sherrill, J. W.: The Diagnosis of Latent or Incipient Diabetes, J. A. M. A. **77**: 1779 (Dec. 5) 1921.

26. Dounévitch, C.: Contribution à l'étude de l'hérédité du diabète sucré, Thèse de Lausanne, 1916.

27. Lorand, Arnold: On the Frequency of Alimentary Glucosuria in the Children of Diabetic Persons, Practitioner **71**: 522 (Oct.) 1903.

28. Jarløv, Ejnar; and Kraunsøe, Sven: Familiaer renal Glykosuri, Hospitalstid. **61**: 753 (June 6) 1918.

V 96
1931

alimentary glycosuria was present in three out of six brothers and sisters, and in the mother, the mother's sister and a son of the mother's brother. The blood sugar was normal and there were no nervous, thyroid or renal disturbances. Diabetes in three brothers and sisters, with glycosuria in two others, is recorded by Parkes.[29]

It is not definitely known by what laws the tendency to diabetes is transmitted. Buchanan[30] in a series of investigations on diabetic families did not find evidence that it was transmitted as a mendelian characteristic. In breeding experiments with mice, Cammidge[31] has recently shown that a natural high blood sugar is recessive to a normal blood sugar in the same way that albinism is recessive to color. He believes that in human beings the diabetic tendency is transmitted in some cases as a dominant, in others as a recessive mendelian characteristic. As a dominant characteristic, it is transmitted directly from diabetic parent to the child. As a recessive characteristic, it may also be transmitted through healthy carriers, and the person showing the disease need not have a parent or a grandparent similarly affected, but the disease will probably be found in some collateral relatives. Cammidge gives as an illustrative case a family of six; three had diabetes, three were normal. This is the situation arising in experimental animal breeding when an affected animal is mated with a "hybrid carrier." In this instance, the father had diabetes, the mother was normal, but her sister had diabetes; hence it seems probable that she was a carrier. One of the three children who had diabetes married a normal man; all of their three children are apparently normal, which was to be expected in the case of a recessive characteristic transmitted under these mating conditions. These children, however, are supposedly carriers, capable of transmitting the disease should they marry in such a manner as to increase the diabetic heredity. It is evident that clean-cut evidence as to the applicability of the mendelian law cannot be collected from our brief and imperfect family records. Cammidge holds that diabetes is more likely to be grave and to appear earlier in each generation when it is transmitted as a recessive characteristic, and to be mild and appear later when it is transmitted as a dominant characteristic. The dominant form tends to perpetuate itself and the recessive form tends to self-extinction. The fact that the dominant form is the one more readily noted is, he believes, the reason that heredity is generally considered a favorable feature in a case of diabetes.

Forty per cent of Joslin's 412 diabetic child patients alive in February, 1930, had hereditary or familial diabetes, as compared with 20 per cent of the children who had succumbed to the disease after a shorter course.[32]

Joslin[8] was able to find diabetes in the family in 28 per cent of a series of more than 2,500 cases. This is nearly the same as the figure found by Priesel and Wagner[33] in a series of 108 diabetic children (27 per cent). A number of other investigators have found figures around 25 per cent.

131 East Franklin Street.

29. Parkes, J. A.: Diabetes Mellitus and Heredity, Brit. M. J. **2**: 1008 (Nov. 30) 1929.
30. Buchanan, cited by Joslin (footnote 8).
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THE PRINCIPLES OF ARTHROPLASTY*

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The operation of arthroplasty is a classic illustration of the principles of modern reconstructive surgery. So much do the indications for the operation, the manner of its performance and the postoperative treatment depend on the particular circumstances of the case that there is need for the wisest surgical judgment in every phase of the procedure. The institution of operative treatment depends not only on the condition actually present but also on the antecedents of that condition, the cause of the ankylosis, and the length of time since the cause was active. The site of the incision and the approach to the joint are determined by the surgeon's experience with the after-effects of arthroplasty; here arthroplasty illustrates ideally how surgery aims rather at the prevention of complications than at their treatment. When complications necessitate reopening the joint, the surgeon must expect to face failure of the operation. The operation therefore demands previsions, just as prevision demands judgment based on experience.

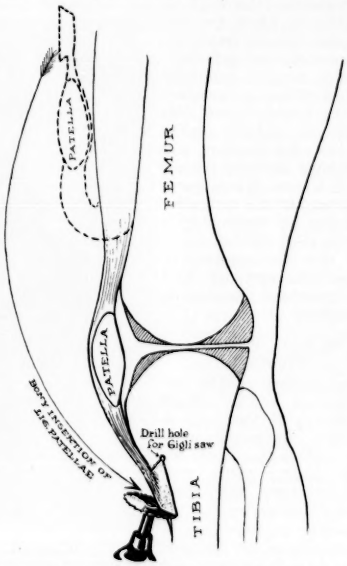

Fig. 1.—Shaded portions removed to complete curve of articular surface. Lateral view.

The technic of the operation demands careful judgment of the needs of the case and the function which the restored joint is to perform. In joints that support the body weight, stability is more important than in other joints. One must profit by one's experience in the behavior of a restored knee joint not only immediately after but in the years following arthroplasty. The

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operation itself is a model of careful workmanship. The tissue interposed must be accurately shaped and the wound sutured in layers, if possible, so that it will be secure against leakage, either outward or inward and severe as a substitute for the synovial sac.

In the after-treatment one may be on the horns of a dilemma: if motion is not instituted, the joint may reankylose by fibrous tissue or bone formation; if the joint is moved too soon, the healing structures may bleed so profusely as to cause a hematoma in the new joint or surrounding soft structures, with the array of difficulties which that entails. Finally, there is the question of when to allow stress. It must be remembered that the original tissue which bore the weight or the stress of the joint movement has been destroyed or removed and that the bone originally at a distance from the face of the joint must adapt itself to its new use.

Altogether, I know of no operation in which the surgeon can turn to better use his knowledge of pathology, including roentgen pathology and bacteriology, of anatomy and the mechanics of joint movements, and his experience in the healing and adaptability of living tissues. Nor do I know of any operative procedure the successful conclusion of which, in all its phases, justifies more pride than that sequence of procedure, operative and postoperative, known as arthroplasty.

Fig. 2.—Parallel, broad, v-shaped incisions with the apex downward are used in modeling the joint anteriorly.

TECHNIC OF THE OPERATION

The Approach.—The approach must permit thorough exploration of the field of operation. The surgeon must leave nothing to chance, for he is dealing partly with rigid structures which will not mold themselves to the assistant's retractor or to suit conditions as the soft tissues do in laparotomy, for example. He must be sure, therefore, when he closes the wound that all structures are properly shaped, placed and securely sutured. This certainly can be gained only by free exposure.

Since it is inevitable that blood and exudate, under a variable amount of tension, will accumulate to a degree in the new joint, and since this tension is exerted on the overlying structures, the incision should be so placed as to spare the suture line from as much direct stress as possible. The incision, therefore, should not overlie the site of the new joint. A sinus is a disaster not because it permits the escape of the accumulated fluid but because, as the flow abates, infection is prone to enter. To insert drainage at the time of operation is to invite infection.

Treatment of the Musculature of the Joint.—The approach and the operation itself may necessitate displacement of muscle insertions or severance of muscles or tendons. The latter should be avoided, if possible, because muscle will thereby be damaged and its future function impaired. The repair of either muscle or tendon is relatively slow and therefore may give way or stretch during early postoperative physical therapy or may delay the beginning of this most important part of the treatment. And, again, if the point of severance has been (as is likely) near the joint, the connective tissue involved in the repair of the structures may produce adhesions with surrounding structures or underlying new forming joint. The choice of technic at this point is determined by the consideration of the postoperative course. Movement of the new joint must be practiced as soon as that is possible with safety after the operation.

The excessive scar tissue may reach to the bone or other soft structures about the forming joint and thus cause limitation of movement. This complication is common enough and vexatious enough without deliberate invitation of it. Instead of severing muscles or tendons, one can reflect the tendon with the periosteum with which it is inserted, and suture it back again at the close of the operation. The method that I prefer to employ, whenever it can be used, is to elevate a block of bone at the point of the tendon insertion and reflect block, tendon and all. This general procedure is based on the principle that the union of tendon with periosteum or bone is more rapid than the union of two tendon fragments.

The advantage obtained by the elevation of a block of bone is that the procedure may be so carried out that the replaced bone is locked into position, as by dovetailing, so that the stress serves only to wedge it more securely into position. I have described such a method of dealing with the insertion of the ligamentum patellae and of the biceps brachialis (fig. 1). In favor of such a procedure, too, are the facts that muscles are always under tension and that spasm will cause sufficient tension to interfere seriously with the healing of a severed tendon or muscle.

Joint Contours.—In most instances the joint contours of the new formed joint should be of normal anatomic character with the exception of the knee. It has been found by Allison and Brooks that it is absolutely impossible to duplicate experimentally, or in surgically constructed joints at the knee, the normal gliding of the articular bone surfaces. This being true, and attempts to approximate the contour of the normal joint being so often followed by lateral instability, it has seemed best to use one's mechanical ingenuity to bring about desirable functional results on an entirely different mechanical plan. Therefore, my technic does not follow the conformation of the normal knee. By making use of well known mechanical principles, I have overcome the disadvantages with respect to lateral instability of

an arthroplastic joint modeled after the normal anatomic joint and still obtain adequate mobility.

With a broad osteotome parallel, broad V-shaped incisions with the apex downward are used in modeling the joint anteriorly (fig. 2).

The lower end of the femur as viewed from its anterior surface is shaped into a wedge with an angulation of 120 degrees between its plane surfaces. This leaves the tibia with concave plane surfaces at an angle of 120 degrees to each other. These in turn are modeled carefully so as to receive with accurate fit the convex wedge-shaped surface of the femur. This is one of the original features of the operation and is an effective measure in the avoidance of lateral instability in that, from a mechanical standpoint, weight-bearing forces the wedge contour of the lower end of the femur into the corresponding wedge shaped cavity of the upper end of the tibia. This peculiar contact practically insures stability and prevents lateral slipping of one joint face against the other. This unfortunate condition is very annoying to the patient and should be avoided. Consequently an unusual amount of laxity can be permitted by removal of an ample amount of bone. A generous amount of bone, particularly at the posterior part of the joint, is removed from what was the tibia and the femur, and the remainder is so shaped that it will imitate so far as possible the normal contour of the joint. However, even more bone is removed from the posterior condyle at this point. Great care should be taken not to leave any blocks of bone attached to soft parts in the popliteal space because of the danger of their acting postoperatively as osteogenic material. It must be remembered, of course, that the removal of too much bone will favor instability, but the wedge-shaped method just described markedly diminishes this possibility.

Fig. 3.—Appearance in a tuberculous patient under conservative treatment from 5 to 14 years of age. An extra-articular arthrodesis was done by myself at the termination of this period, followed by an arthroplasty five years later. The arrows indicate the remnants of two tibial grafts where they were mortised into the great trochanter. This case has a flexion of 90 degrees and normal painless motion in all directions one year after operation.

Great care should be taken to leave the bony surfaces as smooth and plane as possible to facilitate gliding. This is usually best accomplished with a sharp (1½ inch) osteotome. A close study of the conformation of the bony surfaces of the new joint should be made in order to shape them most favorably for the function of joint motion. The proper conformation of the joint should then be tested by flexing the knee to beyond a right angle. Free motion without impingement at any point should be striven for, before the free fascia and fat graft is obtained.

The patellar ligament with its dovetail bone fragment is then replaced in the original mortise bed and sutured down by a kangaroo tendon through the prepared drill holes.

The joint is again flexed very cautiously to at least a right angle, to check up the contours and to insure free excursion of the quadriceps tendon and muscle, so that postoperative physical therapy will not be prevented from securing the desired motion.

The joint is then packed with hot saline compresses, while a rectangular graft of fascia lata and fat is being obtained from the central portion of the outer aspect of the thigh. Being a semifluid substance, the fat under pressure after joint closure practically flows into the cavities and absolutely fills up all periarticular dead spaces, thus preventing the formation of hematoma. For this reason the inclusion of fat with the fascia lata graft seems to me very valuable, and I cannot agree with those who advocate the use of fascia lata alone.

The Interposed Membrane.—The trauma attending the operation results in considerable reaction even under the most favorable circumstances, and the new joint cavity may be filled with blood or exudate, or both, most of which must eventually be absorbed. It is of the greatest importance that the reaction be as mild as possible, particularly in superficially placed joints, either because of the anatomic relationship such as the elbow, or in the case of scar in any joint. Therefore, the minimum amount of irritating material should be used. This is the argument against the use of dead membrane. It is not only the chemical preservative that makes prepared membrane so irritating; it is the fact that it is dead foreign material. The natural reaction between bodily tissues and foreign substance is mutually destructive. The exudate of cells and lymph is intended to digest and remove the foreign material. Since the membrane is prepared for the specific purpose of resisting digestion, it is to be expected that the exudative reaction will be excessive and that the effort to remove the foreign body will be prolonged. I have already referred to the danger of sinus formation and infection. If this should occur as a result of the prolonged and excessive tension and necrosis induced by the tension and the foreign body itself, the situation becomes doubly serious, since a foreign body is a friend of infection. The persistence of the exudate is favored by the dead spaces between the bony elements of the joint, particularly in the knee, which cannot be adequately filled by the membrane. Here surely are all the conditions that favor infection.

The best answer to this argument is the autogenous fascial fat graft as the interposing substance; there is no biologic offense and no abnormal situation, and the fat clinging to the graft can be insinuated into all the pockets about the joint. Sufficient fat should be used not only to fill completely all joint interspaces but also

to fill the whole new formed joint in conjunction with the fascia used so that sufficient tension is produced when sewing up the joint to prevent both intra-arthritic and periarthritic hematoma. Space fortunately can be filled with one substance only. The only theoretical objection is that it might be absorbed before it has fulfilled its work of preventing osteogenesis or adhesions across the new joint. The ability of fascia to persist has been demonstrated both in experimental and in practical surgery, and experience has shown that, if the subsequent steps in the procedure are properly executed, it will serve excellently as the interposing layer.

Suture Material.—The argument which I have just advanced against the use of dead membrane applies also to the use of suture material. The smallest amount of the finest suitable material should be used. For all interior work I use number 0 chromic catgut.

POSTOPERATIVE TREATMENT

Immobilization.—Immobilization should be as brief as is compatible with safety; this refers to the danger of hematoma, which must be avoided at all costs. Movement must not be allowed until the tissues are sufficiently healed. This takes about three weeks.

Traction.—Traction must be strong enough, especially at the hip and knee, to prevent the new surfaces from grinding together under involuntary spasm of the muscles. The continuity of the interposed material may be broken no matter how tough it is, and the sclerosing process of the new bone surfaces checked. Traction also prevents shortening of the capsule and other periarticular soft structures. The duration of traction and its strength must be determined by the surgeon according to his experience in orthopedic surgery. In the case of the hip or the knee, I maintain traction (with immobilization) for three weeks, and constant traction for a further period of from two to four weeks. Traction by right is kept up for a few weeks longer, according to the individual case.

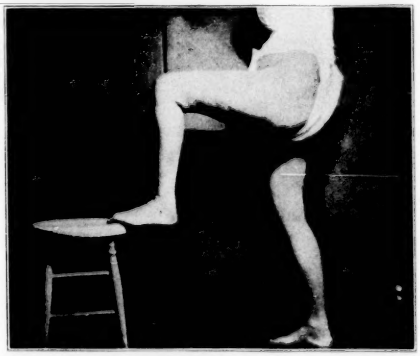

Fig. 4.—The same case as figure 3 showing normal flexion of the hip following arthrodesis and, five years later, arthroplasty.

Other Postoperative Measures.—The institution of active and gentle passive movements is an important point in the postoperative treatment. When the autogenous membrane is used, movement can be started three weeks after the operation in the case of the knee. That is the primary reason for removing the plaster. By this time healing is far enough advanced to make the risk of hematoma negligible, if movements are made cautiously at first.

If, after the lapse of many weeks, the joint movements are limited, forcible manipulation should not be blindly carried out under an anesthetic, unless the soft tissues are lengthened at the same time. Subcutaneous fasciotomy may be carried out, or, as particularly in the case of the knee, the soft structure in the form of check bands or ligaments between the bony elements of the joint may be lengthened through incisions made at each side of the quadriceps if it is determined that they are interfering with flexion and will not yield to ordinary massage and manipulation. Even comparatively late in the case in which the new bony surfaces are well established, forcible manipulations with excessive pressure at the fulcrum may cause trauma to the new formed joint faces or hemorrhage, and eventually impair the entire result.

COMMENT

Although there are occasions when caution must be exercised, it is the caution of wisdom, not of timidity. In the operation itself, boldness is essential. The joint must be freely opened and the bone cut neatly and swiftly. Half measures, piece meal workmanship and blind gouging are the causes of most failures. There are always important structures about a joint. One must know where they are and when one is approaching them. They are most often injured when one is timidly and blindly "feeling" for them.

Many times arthrodesis has a definite relationship to future arthroplasty. No matter for what condition arthrodesis is induced, there is always the possibility that arthroplasty may eventually be possible. Hence, in performing an operation to accomplish arthrodesis, one should have an eye to such a possibility and not close the door on it by a needlessly destructive procedure. From a general standpoint illustrative of this, I wish to mention my own former practice, as well as the present practice of others of using the patella as an osteogenic influence by mortising it between the tibia and the femur in all arthrodesis operations. My practice for some time has been to refrain from doing this in all cases in which there was a chance of doing a future arthroplasty and to take great care to preserve the patella, as well as to keep the complete "extensor apparatus" as completely intact as possible. Tibial bone graft pegs are used instead. Similar indications occur at the hip. In 1913, I began in selected cases to arthrodese the hip by a method which is really extra-articular. Since then, procedures by others labeled extra-articular are not. This is an important consideration in the procedure, which I have published several times. Two strong tibial grafts are used well outside the joint so that they can be readily removed in the event that it is desirable to do an arthroplasty to restore mobility (figs. 3 and 4). Further, when this procedure is used, neither the musculature of the hip nor the contours of the bony elements are destroyed or impaired. This is not so in other operations reported, particularly when the greater trochanter and the outer side of the femur are used. This operation as first described by Haas is not extra-articular; denuding the upper surface of the neck and the surface between the trochanter and the rim of the acetabulum with a bony mass seriously interferes with an arthroplasty.

V 96
1931

Tuberculosis again illustrates the case in point. At one time successful arthrodesis marked the finish of the case. Now it is possible to restore movement when the passage of time and roentgen evidence indicate that the infection has disappeared from the joint. In this respect careful roentgen study has been most trustworthy in my hands. I have never attempted an arthroplasty in any tuberculosis case in which the roentgenogram did not show the form throughout the joint area to be homogeneous in structure and of good density. I have never attempted any case in which there was evidence of rarefaction or vacuolization. I have operated on four knees, three hips and five elbows without relapse of tuberculous infection.

I am not making a case, at the moment, for arthroplasty in old tuberculosis, but even the most skeptical must admit that the infection does die out. Whether or not the roentgen evidence is reliable may be disputed, but it is no part of progressive surgery to maintain that it never will be.

57 West Fifty-Seventh Street.

ABSTRACT OF DISCUSSION

DR. EDWIN W. RYERSON, Chicago: Arthroplasty is an important surgical operation, important, first, because it conveys so great a benefit in a properly resulting case to the individual patients, and, secondly, because it is a difficult and somewhat dangerous operation to perform. As Dr. Albee says, one cannot expect to get typical gliding motion in the knee joint. It was some four or five years ago that Magnuson told me of his idea of producing a wedge at the end of the femur to articulate with the upper surface of the tibia, only the wedge was in exactly the opposite plane to that wedge which Dr. Albee showed in his last picture. I am totally unable to see how such a wedge as a fore and aft bevel could produce nearly as good mobility in the knee as Magnuson's idea of having the wedge transversely and letting the femur rock on the tibia. I do not think tuberculous joints should be operated on with the idea of producing motion, because the ordinary tuberculous joint does not get well easily, and the tubercle bacilli are apt to persist for a long time unless a true bony ankylosis has occurred. I have felt able to operate in only a few proved tuberculous cases. In one the result was fair, and in two of them the result was not good. More of the head of the femur should be removed than I have been in the habit of removing in the past. Some of my patients have motion that is too limited because I left too much of the head of the femur. The neck is about all that should be left to reproduce a freely movable arthroplasty. The great consideration in these operations is the possibility of sepsis or fat necrosis. Sepsis usually results because a blood clot is formed which later undergoes a degeneration, and germs get in and make a bad mess. It is impossible to control all of the hemorrhage after an arthroplasty of the hip or knee. Dr. Albee's suggestion of using a lot of fat on the flap, as originally done by Murphy, is perhaps as good as MacAusland's idea of using two pieces of fascia lata, making a double flap. Perhaps if one gets it filled up better there will be less hemorrhage and less infection. The problem of closing up the joints completely by suture is to be debated. It is perhaps wiser to make a stab wound at a distance from the margin of the flap and allow the blood to drain out, if there is, as there almost invariably is, a good deal of hemorrhage after the operation.

DR. E. M. COWART, Iowa City: Dr. Albee's emphasis on detail in his principles is welcome. My experience bears out his opinion substantially. Approach to the joint with muscle-sparing incisions, interposition of appropriate material and immobilization until healing is complete are important principles. In reviewing a series of forty-five arthroplasties done at Dr. Steindler's clinic, it was found that prior to about two years ago the results were rather unsatisfactory. It appeared, however, that since that time the patients have done remarkably well. The selection of material was not an important factor, for our choice of cases has always been conservative; rather was the improvement in our results due to the adoption of a new principle advocated by Dr. Albee in America and Dr. Haas in Austria. As opposed to the time honored plan of production of new articular surfaces simulating the normal joint contours, as urged by Murphy and Putti, Drs. Albee and Haas have emphasized the production of incongruent joint surfaces. Thus, in the knee the articular surface of the femur would assume the shape of a wedge. In the hip, marked disproportion of the articular surfaces is again emphasized. In the knees operated on by this new method, 85 per cent have obtained a satisfactory range of motion and the joints have been stable and painless. Another detail that I believe to be of importance is the preoperative education and development of musculature about the ankylosed joint. I have encountered patients on whom an excellent technical operation had been performed, resulting in a wide range of passive motion, who many months later were still unable to place any reliance on the joints on account of muscular weakness. Consequently, as a routine I now send the patient to the gymnasium for a prolonged course of muscle training before operation, so that when the conditions for motion have been established by operation the patient will be able to move the joint actively. Is it not true that one is often prone to hurry the patient from the street to the operating room without attention to such details as muscle reeducation? Dr. Albee's emphasis on these details, I may repeat, is refreshing indeed.

DR. JAMES S. SPEED, Memphis, Tenn.: I think that the progress developed in any operation depends as much on the indications for not doing it as it does on those for doing it, and I cannot help but take this opportunity to rise and say that I believe tuberculous joints are dangerous joints for arthroplasty. I believe that in the end of a long series of cases of tuberculous joints more discredit than praise will be thrown on the procedure. The number of surgical disasters will be sufficiently great to convince one that this type of case had better be left out of those classified as suitable ones for arthroplasty. I realize, of course, that one does occasionally get by with an excellent result in tuberculous cases, but it is still a disease in which surgical intervention is hazardous and danger is always lurking at hand. Another type of disease in which the outlook is extremely bad is in joints that have become ankylosed because of an osteomyelitis involving the bone adjacent to the joint. In this type of case the bone is usually of a poor quality for surgical work; also one is never certain when the living bacteria have been completely eliminated from the bone. It is known from experience that living cultures can be obtained from the bone in osteomyelitis as long as ten or fifteen years after all activity has subsided. In reviewing the cases which I have had, I was somewhat surprised to find that in ten cases in which osteomyelitis had been the causative factor, eight had a lighting up of the old infection sufficiently severe to cause a serious complication. I am now very careful about advising an arthroplasty on a joint ankylosed from osteomyelitis, unless, of course, the joint is in such poor functional position that some operation is urgently indicated for a correction of the deformity. I believe that in exposing joints for arthroplasty the conservation of the periarticular structures is of prime importance. The less disturbance there is to these structures the sooner will one be able to reestablish function and the less disturbance will there be in function.

The Most Nearly Perfect Food.—From the evidence at hand today, it would seem that the explanation of the long lives observed by Metchnikoff in the Balkans and elsewhere could be attributed not so much to the bacillus which sours milk as to the beneficial effects of the milk itself. Soured milk still retains the important vitamins, the necessary minerals, and the other elements which perform the physiological miracles resulting in improvement in the physical welfare of man. Milk has been called by its enthusiastic proponents the modern elixir of life. Without dealing in superlatives, it can indeed be said that milk is the most nearly perfect of human foods for it is the only single article of diet which contains practically all of the elements necessary to sustain and nourish the human system.—Crumbine, S. J., and Tobey, J. A.: The Most Nearly Perfect Food, Baltimore, Williams and Wilkins Company, 1929.

THE TABETIC ARTHROPATHIES *

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Almost a century has elapsed since the first reference to tabetic arthropathies was made in the literature by Mitchell,[1] whose short article appeared in 1831. Thirty-seven years later, Charcot[2] (1868) began to call attention to arthropathies appearing with lesions of the brain of the spinal cord and created a clinical entity which, in honor of his work, now bears his name.

Because of its striking and grotesque features, the disease has aroused considerable interest. A flood of contributions made its appearance, principally from Germany and France. Blencke's[3] review in 1904 quotes almost 400 articles on the subject.

The present paper is based on the observation of sixty-four cases of arthropathy involving ninety-nine joints. Of these, only two, or possibly three, were definitely nontabetic. In three cases, a diagnosis of cerebrospinal syphilis was made, and it is possible that in these the arthropathy was an advance symptom of oncoming tabes.

ETIOLOGY

Mitchell, in 1831, was the first to point to the connection between cord lesions and certain joint diseases. Tabes was added by Charcot in 1868, myelitis by Weir Mitchell in 1875, anterior poliomyelitis by Laborde in 1873, and, finally, syringomyelia by Sokoloff in 1892, the latter reporting twenty cases from the literature and three of his own; the oldest case reported is that of Blasius in 1848.

Arthropathies are known to occur also in lesions of the cord following fracture of the spine; Chipault observed them in hematomyelia, Riedel and Westphal in peripheral nerve lesions, and they have been observed in spina bifida manifesta or occulta.

Lotheisen[4] computed that 10 per cent of the tabetic patients acquire arthropathies, whereas the figures of Marie are 4 or 5 per cent. In syringomyelia, 25 per cent of the cases acquire arthropathies. It was held by Charcot that these joints might occur at early stages of tabes and Oehlecker also considered the possibility of such arthropathies being early signs of appearing syringomyelia.

Seemingly, there is a preponderance of cases in the male sex, 62 per cent male to 38 per cent female (Wile and Butler) and also a preponderance of frequency in syringomyelia, appearing here in 25 per cent of the cases, while in only 10 per cent in tabes. But these frequencies are only apparent when one considers the great preponderance of tabes in general over syringomyelia and also of tabes in the male over tabes in the female. Erb gives the ratio as 19.5 male to 1 female; Mendel[5] as 3.5 male to 1.31 female.

While tabetic arthropathies are more common in the lower extremities, syringomyelia selects the upper extremities, and, according to Sokoloff,[6] the ratio is 80 per cent in the upper and 20 per cent in the lower extremities.

PATHOGENESIS

From the time of Charcot's publications a controversy as to the pathogenesis of arthropathies has been carried on. Charcot himself considered the condition entirely of neurogenic origin. He believed that the trophic and circulatory disturbances arising from the degeneration in the spinal cord were responsible for the joint changes, which apparently followed no biologic rules in their development. He was violently opposed by Volkmann[7] and others, who advanced the mechanical traumatic theory, asserting that external influences acting on a joint so predisposed by cord degeneration were the eliciting factors.

It seems that the loss of joint sensibility produces the basis on which later, under chronic static and traumatic influences, the arthropathic joint develops (Oehlecker). Oppenheim, Westphal, Dejerine,[8] and Weitzsäcker see in the effect of the nerve degeneration the keynote of the pathogenesis of the arthropathic joint, while Rotter[9] and others content themselves by explaining the syndrome of tabetic arthropathies on the triad of analgesia, ataxia and increased fragility, drawing a close parallel between this arthropathy and simple arthritis deformans or traumatic arthritis, and even denying the specificity of tabetic arthropathies.

Interesting experiments have been carried out to test the effects of peripheral nerve lesions on bone. Ghillini[10] found, after section of the sciatic nerve, increased length growth due to the diminished pressure. Kapsammer in 1908 also found no definite changes after section of the sciatic nerve, except increase in length growth. Whatever changes seemed to appear in thickening were due rather to trauma. In addition, the experiments of Eloesser[11] on root sections of peripheral nerve show that no such changes as are seen in tabetic joints occurred. All this would mean that a superinducing, traumatic influence is necessary for the production of tabetic arthropathies.

PATHOLOGY

Many of the older observers point to the parallelism that exists between the intra-articular changes of arthropathies and those of arthritis deformans (Klemm), in spite of the fact that they are different in clinical details.

Neuropathic arthropathy is characterized by the para-articular changes, the exostoses and especially by the extra-articular and interarticular exudations, which distinguish this type from the drier form of chronic hypertrophic arthritis. Charcot distinguished between a malignant and a benign type of arthropathy, but exception is made to this distinction (Klemm) since the benign form of arthropathy often becomes malignant in the course of development. It is more to the point to distinguish between a hypertrophic, a proliferating and a degenerative atrophic form. In the latter, the degenerative changes, with relaxation or displacement, prevail, and in the former, the hypertrophic changes, such as extra-articular and intra-articular

* Read before the Section on Orthopedic Surgery at the Eighty-First Annual Session of the American Medical Association, Detroit, June 25, 1930.

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V 96
1931

exostoses, osteophytes and ossification of ligaments and muscles predominate. But these types also may merely represent different stages of arthropathy, and one often observes proliferation of joint cartilage, ossification of deep layers and marginal lipping at contact points, to be followed later by defibrillation of superficial and eburnation of the deep layers, and destruction and resorption of the joint bodies, both intra-articular and extra-articular.

The second of these types is seen especially in the arthropathies of the shoulder and hip and in the so-called pied tabétique. The destructive process starts with the disappearance of the cartilage, the widening, erosion and enlargement of the acetabulum, and the disappearance of the head. The destruction of the acetabulum involves mainly the posterior and upper circumference. This causes a wandering acetabulum and a pathologic dislocation upward. Occasionally a perforation into the small pelvis may be seen. The femoral head becomes lost by attrition; also part of the neck, the so-called drumstick head of the French authors. In another type, joint fractures, for instance, intercurrent fractures of the neck of the femur, perforation of the acetabulum, fracture of the condyles of the tibia, and fragmentation of the ankle and subastragaloid joint, are seen as early signs of joint involvement.

In general, arthropathy is characterized by cartilage erosion, chip fractures and compression fractures, flattening and condensation of the joint bodies, marginal proliferations, intra-articular and extra-articular exostoses, and ossification of the ligamentous and muscular structures. In the so-called benign form the effusion is the outstanding pathologic picture. Effusion comes and goes, but if it persists it has a destructive effect by contributing to relaxation of the ligamentous apparatus and to abnormal alinement under the added influence of weight and pressure stresses to which the joint is exposed and against which it is not protected because of its indolence and insensitiveness.

Fig. 1.—Charcot hip: Degenerative type, early.

The changes in syringomyelitic arthropathy are the same, only that they involve the upper extremity by preference, are slower in development and do not attain the degrees of destruction seen in tabes. This is due merely to the absence of weight-bearing stresses in the upper extremities. As in tabes, there is here also exudation, para-articular callus formation and ossification, hyperplasia of the capsule, relaxation and, finally, degeneration and destruction. Borchard describes muscle atrophies, infiltration, myositis fibrosa and ossificans and other extra-articular changes, as well as capsular relaxation, thickening, infiltration and effusion. The cartilage he finds atrophic with defects alternating with proliferative changes. The defects are frequently filled out by connective tissue.

In arthropathy of the shoulder, enlargement of the glenoid fossa and absorption of the head characterize the pathologic picture; in the elbow an enormous thickening, articular proliferation, para-osteal callus exostoses and muscular ossification are frequently seen. The hand often shows a condition of volar dislocation with thickening of the forearm bone and the carpals.

Another feature is the ossification process in the muscle. Particularly those muscles are involved which are exposed to permanent stresses and strain. This leads often to a sort of internal splinting, as seen in the knee joint or hip joint, the splint being produced by enormous periosteal and para-articular ossifications in the muscles and ligaments. It occurs by metaplasia as in myositis ossificans. There also results a formation of extra-articular free bodies, typically for the arthropathies of the tarsus (Levi-Ludloff). Of particular interest are the spontaneous fractures; for instance, fractures of the posterior process of the calcaneus, fracture of the malleolei, and fractures of the shaft of the femur, of the astragalus, and of the metacarpus. In our series of sixty-four cases, involving ninety-nine joints, there were no less than eleven spontaneous fractures recorded in the history: fracture of the astragalus, one; Pott's fracture, one; fracture of the neck of the femur, three; fractures of the knee (lower end of the femur or of the patella), four, and fracture of the os calcis, two.

It was Charcot who, first in 1873, called attention to the frequency of spontaneous fractures in tabes. Kredel, in 1888, collected reports of seventy-three cases. According to Grunert, the sudden fracture is often the first sign of tabes. It most frequently occurs in the femur, next in the tibia and the forearm, but it is also observed in the short bones, especially the tarsus. Baum [12] reports among eighty-four pathologic fractures, twenty-eight of the femur shaft, sixteen of the tibia and fourteen of the femoral neck. The peculiar feature of these fractures is their indolence and the tendency to rapid consolidation. Grunert cites a number of cases of spontaneous fractures, principally of the upper extremities, in syringomyelia.

For the orthopedic surgeon it is of especial interest to know what the pathologic changes are behind these frequent spontaneous fractures, particularly since they may be the first signs not only of the arthropathy but also of tabes itself. Oppenheim mentions a case in which the fracture actually antedated the first tabetic symptom by eighteen years, and an interval of from two to three years between the spontaneous fracture and the initial tabetic symptoms is not uncommon (Oehlecker). Blencke found in sixteen cases of spontaneous tabetic fractures general signs of tabes in only four, and only two of these cases were in the ataxic stage.

What is the anatomic basis for the fragility of the bone? The older observers believed in the existence of an osteoporosis of halisteresis, i. e., deficiency in lime salts, and the investigations of Regnard seem to bear out this contention. He found 24 per cent of inorganic substance against 62 per cent in the normal, and 76 per cent of organic matter against 38 per cent in the normal. Later investigations and especially the

12. Baum: Knochenbrüche bei Tabes, Deutsche Ztschr. f. Chir. **89.**

roentgen studies, however, disproved the theory of halisteresis. The brittleness of bone is rather explained by the preponderance of the inorganic salts.

It is well known that experimental atrophy of bone can be produced after the section of the sensory nerve (Schiff), or after root section,[11] which is comparable to the trophoneurotic atrophy of Sudeck or to the atrophy found in central lesions; for instance, in poliomyelitis anterior. But in tabes the roentgen-ray or the microscope shows no rarefaction of bone or increase of the marrow space, but rather a sclerosis.[9] Furthermore, the prompt healing of this type of fracture refutes the theory of a trophoneurotic bone atrophy of the Sudeck type.

On the contrary, the roentgen ray shows that the tabetic bones throw a very intense shadow,[12] and Borchard also found that on microscopic examination the bone was normal, heavy and without rarefaction. The fragility in the face of the apparent massiveness of bone is explained by the poor or irrational architectonic structure of the bone (Baum, Levi-Ludloff). Calcium deficiency, as seen in rickets, would make for greater pliability, whereas in tabetic bone there exists

Fig. 2.—Charcot hip: pathologic fractures.

a deficiency of the organic element rather than the anorganic. It is also pointed out that while the fractures of the osteoporotic bone are usually spiral or oblique, the typical tabetic fractures of the long bones are transverse, especially the fractures of the upper end of the femur.

THE MICROSCOPIC PATHOLOGIC CHANGES

The question is where to look for the primary pathologic changes. According to Jürgens, they occur in the capsular and ligamentous apparatus. Virchow[14] thought that the process begins with the swelling of cartilage, thickening, proliferation and enormous enlargement of the cartilage cells; then, in the second stage, degenerative changes develop as already described. Reference has been made to the frequent, extensive effusions of synovia or synovia-like fluid in the joint, in types which were considered benign by Levi-Ludloff and brought in relation to syphilitic joint disease. Förster also reports cases of such effusion with tabetic symptoms, favorably influenced by antisyphilitic treatment, and thought it possible that they had as their basis a syphilitic endarteritis.

Newer investigation, to which I shall refer later, shows that the disease begins in the cartilage and the calcification zone between the cartilage and the underlying cancellous bone.

In describing the microscopic details of the cartilage changes, Barth[15] finds the cartilage lost in places, covered by vascular and cellular connective tissue, a form of pannus, while in the depth there is an abnormal proliferation of cartilage cells, with formation of new cartilage islands. The spongiosa is of irregular structure, and the spaces between the lamellae are filled with cellular and vascular connective tissue and contain giant cells similar to those seen in giant cell tumors. But whether these are osteoblastic or come from the endothelium of the blood vessel or from fibroblasts is not determined. Levi-Ludloff concedes the possibility of the osteoclastic nature of these cells, resulting in catabolism and the resorption of the spongiosa, while many lamellae appear lined with osteoblasts, so that one sees production and absorption of bone go hand in hand.

In the cartilage, vacuoles are observed, but these are secondary regressive changes, developing under abnormal weight stresses or other external influences. Barth points out that the formation of the vacuoles precedes the transformation of cartilage into connective tissue. In the later stages the destruction of the cartilage is accompanied by that of the underlying spongiosa, and large crevices and defects are formed which are filled with wide meshed connective and fat tissues. The absorption of bone is carried out by numerous giant cells. Never is any necrosis found.

Virchow believed that in tabetic arthropathies the primary changes are in the cartilage, differing from arthritis deformans by the more erratic course and a greater intensity of destruction. In arthritis deformans, the degenerative phase comes first, and then follows the proliferative change, while in tabes the opposite is true.

A great advance in knowledge of the microscopic features of the arthropathic joint was made by a study of Moritz, carried out in the Institute of Erdheim in Vienna. He noticed an inactivity atrophy of cartilage wherever pressure is relieved, for instance, in subluxation, while proliferative changes occur wherever there is abnormal static stress.

The first histologic changes are proliferative. They involve the joint cartilage and consist in hyperplasia of cells and an increase of the hyaline substance. This is a preliminary step for the following endochondral ossification. In the old cartilage, formation of cavities and fissure-like places are observed, in which cartilage and connective tissue fibrillae are matted to the intermediary calcification zone. This cartilage is then covered by a pannus, and, by a process of catabolism, resorption of the cartilage takes place from above. From below the catabolism of the cartilage is carried out through the marrow spaces of the spongiosa. Here subchondral absorption occurs from below, with formation of lacunae situated between spongiosa and the preliminary calcification zone. So, the destruction and absorption of cartilage occurs from both sides, both from the pannus above and from the spongiosa marrow below. In this way hollow places, the so-called Weichselbaum lacunae, are formed, and the cartilage appears honeycombed.

13. Kienböck: Untersuchungen der trophischen Störungen bei Tabes und Syringomyelia im Roentgenbild. Neurol. Centralbl. **22**: 55, 1901.
14. Virchow: Arthropathie tabicorum, Beilage d. Klin. Wchnschr. **49**: 852, 1886.
15. Barth: Arch. f. klin. Chir. **69**.

The particularly characteristic point for tabetic arthropathies is that the endochondral ossification, under the joint cartilage which ordinarily becomes stationary with formation of a continuous limiting bone lamella, the so-called preliminary calcification zone, is now becoming extensively revived. The first step of this revival is the tabetic proliferation of the joint cartilage. The second step is a forward pushing of the preliminary calcification zone, and the third step is a penetration of vascular marrow recesses into this zone and then into the now calcified cartilage.

It was Meyer who, already in 1851, recognized this rejuvenescence as the keynote to the histopathologic changes of the tabetic arthropathies. It is seen that the joint reacts on all occasions with this resumption of endochondral ossification. And the degree of this reaction is so great and so diverse that, by dint of simultaneous proliferation and absorption, an enormous incongruity of the joint surfaces may result, a misfit of the joint surfaces with unequal distribution of pressure stresses and with fractures and infractions of the joint bodies.

Roux emphasizes the effects of pressure on the formation of cartilage in synovia and periosteum. Gradually the pannus-covered cartilage becomes thinner and thinner by friction while the preliminary calcification zone becomes thicker. There is an irregular line of demarcation between the calcified and calcium free cartilage, which is ground off by the gliding movements, and spurs of calcified cartilage are easily broken off. Finally the calcification zone of the subchondral spongious substance lies bare, and, as in arthritis deformans, sclerotic bone facets are formed. By friction and concussion a considerable portion of the exposed spongiosa may be destroyed. Such attrition processes may lead to considerable changes in the contours and configuration of the joint bodies.

A blow or a jolt vertical to the articular plane may cause infractions and the very brittle preliminary calcification zone breaks in radial fissures. Under stimulation of the subchondral bone marrow callus forms, first fibrous, later bony (Moritz).

According to Moritz, these intra-articular fractures are of the greatest importance for the course of events. They are especially significant for the morphologic changes of the joint bodies, where they lead to deformations, depressions and displacements; in the knee, valgus and varus deformities and other disalinements result. The synovial membrane reacts by thickening of the capsule and formation of synovial fringes, which often contain calcified cartilage.

The influence of mechanical factors is further proved by new bone formation in the ligaments. They are often of trabecular structure and laid down in response to stresses. In general, those portions which are taxed for stress show osteosclerosis, whereas those that are relieved from mechanical stresses show osteoporosis.

PATHOLOGIC CHANGES DISCLOSED BY ROENTGEN RAYS

With the help of roentgenology all the gross anatomic features of arthropathy can be demonstrated. The proliferative changes make their appearance in the form of parosteal callus, periarticular and intra-articular ossification, platelets, rings and ossification in the joint capsule. Free bodies are also observed frequently (forty-seven out of ninety-nine joints).

The Hips (eighteen cases).—Beginning cases show erosion of the acetabulum and irregularity of the joint line. In more advanced cases there is destruction and enlargement of the acetabulum in its posterior and upper portion, and absorption of the head and the neck. In several cases an enormous acetabulum had formed with pathologic dislocation of the remainder of the neck and the shaft upward and backward. Coxa vara deformity was observed in some cases after a pathologic fracture.

The Knee.—In the earliest roentgenograms, signs are seen in the condyles, more often the internal, of the tibia. One notices a breaking down, flattening and condensation of the subchondral bone. With the advance of the destruction, the genu varum or valgum deformity becomes established. The flattening and condensation of the condyle is almost typical for earlier stages of Charcot knee. Pathologic displacement is seen also in the sagittal plane as posterior or anterior dislocation.

Of the forty-two Charcot knees observed, I found: straight genu varum deformity with or without medial displacement of the tibia in twenty cases; genu varum with posterior displacement in six cases; genu valgum with or without lateral displacement in five cases, and genu varum with anterior displacement, i. e., a genu recurvatum, in two cases. Straight lateral displacement was found in one case; lateral and posterior displacement in one case, and straight posterior displacement in three cases. In one case there was only a flexion deformity.

Fig. 3.—Charcot ankle joint.

Free bodies were seen in twenty-four of the forty-one Charcot knees. Parosteal callus and exostosis were a common observation, especially in more advanced cases. Of interest are the intramuscular and ligamentous ossifications, which in some cases assumed formidable degrees, forming a regular sheath of bone around the knee, evidently nature's attempt to splint the greatly relaxed articulation. The same was noted in one case of Charcot hip. Wilms,[16] in 1899, first called attention to those ligamentous and muscular ossifications. He described the long bone tongue one sees running up on the inner side of the thigh because of ossification of muscles and tendons, and also reported cases of hip joints encased in mighty bone masses, which were formed by ossification of the muscles about the hip.

Ankle.—Twenty-one of the tabetic joints involved the foot and ankle. In the tibio-astragaloid articulation (seven cases), the most striking changes are the flattening and broadening of the astragalus, the broadening

16. Wilms, M.: Arthropathie, Myositis ossificans und Exostoses Behandlung bei Tabes, Fortschr. a. d. Geb. d. Röntgenstrahlen **3**: 39, 1899.

and flattening of the malleoli and the formation of parosteal callus; the relaxation of the soft parts is expressed by anterior, posterior and lateral displacement. The most extensive changes are found in the neighborhood of Chopart's joint, next in the subastragaloid articulation. Chopart's joint shows comminution and jamming, parosteal callus and free bodies. The greatest pathologic changes correspond to the maximum of mechanical stress; that is, the direction of the greatest weight-bearing. It is shown by the flattening and condensation of the head of the astragalus and of the os calcis, as well as by the disintegration of Chopart's and the subastragaloid joint (pied tabétique).

Of the deformities, the valgus is the most frequent—eleven cases; varus deformity was seen in three cases; forward and lateral displacement in one case; free bodies were not infrequently observed in Charcot's ankle (in eight out of twenty-one joints).

Two types of destruction may be distinguished (Fort): one in the direction of the axis of the leg, breaking down astragalus and os calcis; the other is a collapse of the forefoot and tarsus as seen in so-called

Fig. 4.—Charcot subastragaloid joint.

pied tabétique. The tarsometatarsal region was involved in two cases; here the greatest destruction is in Lisfranc's joint and a considerable amount of parosteal callus is formed.

Spine.—There were eight cases of tabetic spondylitis, varying from lesser destructions of the vertebral bodies to formidable deformation with the production of very powerful parosteal callus and the ossification of the long vertebral ligaments.

Shoulder.—There is only one case of Charcot joint of the shoulder in my series. The roentgen observations are similar to those seen in the hip; extensive destruction of the glenoid fossa, with corresponding absorption of the head and neck. There is also a tendency to produce enormous joint effusions, which dilate and perforate the capsule and penetrate into the adjacent tissues. The joint contained a great many free bodies. This was in a nontabetic patient.

The Elbow.—Two elbow joints were involved in one patient, also in a nontabetic patient who had syphilitic cord lesions involving the sixth and seventh cervical segment. The roentgen examination showed extensive destruction of the bone ends and disintegration of the joint, a great deal of periosteal callus with valgus deformity of the elbow joint and a great many free bodies in the articulation.

SYMPTOMATOLOGY

Indolence, analgesia, disturbance of the deep sensibility, abnormal mobility of the joint, instability and deformities are outstanding clinical signs of the Charcot joint. It is almost characteristic to find the onset of the disability to be due to a rapid collapse of the joint, especially in the tabetic joints of the lower extremity. Aside from cases with manifest pathologic fractures, traumatism associated with ligamentous tears and severe soft tissue strains often marks definitely the clinical onset of the arthropathy. I found a distinct traumatic onset in twenty-five of the ninety-nine joints while in others a definite aggravation after trauma was observed.

In many instances the joint arthropathy is the first tabetic symptom complained of; I found it to be the first tabetic complaint in eleven cases, five hips, five knees and one ankle.

As to the time elapsing between the syphilitic infection and the appearance of tabetic symptoms, the statements vary. It usually appears late. In one case syphilis had existed for forty-three years while the Charcot joint appeared forty-one years after the onset of syphilis. Another patient had his syphilitic infection thirty years ago and the tabetic joint (knee) developed twenty-eight years later. Intervals of from fifteen to twenty years are common.

Next to the absent knee jerks, the most constant tabetic sign was found to be the Argyll Robertson sign, which was present in 48 out of 64 cases. Ataxia and Romberg's sign came next with 33 cases; lancinating pain was noted in only 24 and numbness or paresthesia in 15 cases. In 6 cases there was loss of control of the bladder, and girdle pain was noted in 7 cases. I found the knee jerks abolished in 53 cases and present in 5; there was no record in 6 cases. Of the 5 cases with knee jerks present, all were apparently nontabetic; 3 were cases of cerebrospinal syphilis. Gastric crises were found in 3 and trophic ulcers in 1 case only. The blood Wassermann reaction was by no means consistent: in 40 cases a positive Wassermann was recorded, either during the time of observation or at some time prior to it. A negative Wassermann reaction was recorded in 21 cases; no records were obtained in 3 cases. In 34 cases the duration of the syphilitic infection could not be determined either because there was no history of syphilis or because the time of contraction was unknown to the patient. I found enlarged inguinal and epitrochlear glands in 4 patients; paraplegia or hemiplegia preceding the tabetic joint symptom in 4 cases (1 paraplegia, and 3 hemiplegias). Of other complications there were syphilitic arthritis coexisting with tabetic joints in 3 cases, and 1 case of possibly syphiliiic subgluteal bursitis. Coexisting syphilitic osteoperiostitis was somewhat more frequent; i. e., in 6 cases out of 64. Purulent infections were not uncommon. Complicating osteomyelitis was observed during the time of treatment in 6 cases, septic arthritis in 1 case. It is not strange that the Romberg sign and ataxia were noticed in only 33, approximately one half of the patients. According to Charcot and Weitzsacker, the beginning of the diseased joint in the preataxic stage is more common.

Rotter reports twelve cases in the preataxic stage against forty cases in the ataxic. But it must be considered that many of these reports date from preroentgen days, and with the diagnosis of Charcot joint being made much earlier it becomes more probable

that a preponderance of cases will be found in the preataxic stage. This fact carries great weight with that part of orthopedic treatment that aims at the preservation and reeducation of the muscle sense.

The question has been raised whether analgesia is an essential feature of the arthropathy. Rotter believes that all arthropathic joints are insensitive, while Sonnenburg cites cases of arthropathy showing a great deal of sensitiveness. Analgesia, though certainly the rule, does not apply to all cases. Considerable subjective complaints were made in cases of traumatic onset with sudden collapse of the joint. Pain and tenderness was a distinct feature in sixteen out of ninety-nine joints; of these, three were ankles, three hips and six knees while one was a shoulder.

THE TREATMENT

Many of the older observers express themselves unconditionally for the conservative treatment and against operations (Vulpius, Hoffa, Ährens,[17] Blencke), with the exception of the amputation in cases of extreme destruction of the ankle or knee joint. The alinement and stabilization of the affected limb is best brought about by well fitting portative apparatus. With careful application and use, arrest of the deformity can be observed for as long as five to eight years or more.

Of the 64 cases, 42 were treated conservatively; 12 cases (15 joints) operatively, and 10 cases were not treated. The conservative treatment consisted in alinement and support by braces or casts, and in physical therapy; i. e., massage, exercises and muscle reduction. Of the 42 cases conservatively treated, 24 improved, 12 cases showed no change or got worse, and in 6 cases the result of treatment remained undetermined because of the shortness of observation time. As satisfactory result was considered an arrest of the destruction in the joint and such improvement in function as would result from adequate stabilization of the joint by portative apparatus. Twelve patients, in whom 15 joints were involved, were operated on. Of these 9 joints showed improvement of function, 5 were not improved and 1 case was undetermined.

Fig. 5.—Charcot midtarsal joints (tabétique).

Details of Operative Treatment.—Spine: There was one case in which a Hibbs arthrodesis was done; in this case the result was good in that the process seemed to be arrested, but supporting apparatus was continued.

Knee: There were five cases; of these three were fusions, one a synovectomy and one an amputation. All three fusions showed improvement, two resulting in what appeared to be bony fusion and one in fibrous union. In all three cases the alinement was good but all continued to wear portative apparatus. In the one case of synovectomy of the knee no improvement was recorded during the time of observation. One patient had to have an amputation above the knee because of complicating osteomyelitis.

Hip: The results as a whole were less satisfying. There were five patients operated on. In one case the Whitman reconstruction operation was performed but the result was a failure because of the progressive destruction in the joint. No stabilization could be obtained.

In the second case of arthrodesis of the hip (Smith Petersen approach) the result was fair, as the stability was better after operation. Of two cases in which the Lorenz-Baeyer bifurcation operation was employed, one gave good results; the other was a failure.

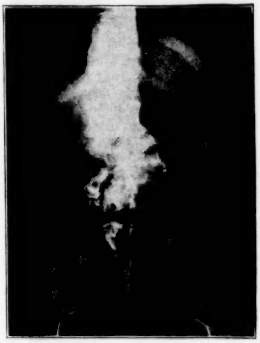

Fig. 6.—Charcot spine.

Ankles: There were three cases, one an amputation because of complicating osteomyelitis; in another case a good result was obtained by osteotomy of the tibia and fibula, which corrected the severe varus deformity so that a portative apparatus could be worn to much greater advantage. In a third case, of arthropathy of the ankle, subastragaloid arthrodesis was done. The operative result was satisfactory; stabilization was gained; although some discomfort on weight-bearing persisted.

Shoulder: One case was treated by resection. The result to date is undetermined.

CONCLUSIONS

First, earliest detection of the arthropathic joint by roentgen examination in the preataxic stage, even as the first symptom of oncoming tabes, and, secondly, immediate and adequate protection of the joint to prevent detrimental external influences are the two paramount issues. While it must be expected that the neurogenic background predisposes the joint to arthropathic disintegration, it seems certain that mechanical and traumatic events are determining factors that shape and fashion the course of the disease and that sooner or later lead to the breakdown of the articulation. Protection against these influences by early and adequate splinting, preservation of protecting musculature by physical therapy and, above all, earliest stabilization and alinement by conservative or operative means furnish the best prospects of extending the usefulness of these joints for many years.

Children's Hospital.

ABSTRACT OF DISCUSSION

DR. J. A. FREIBERG, Cincinnati: In many of the knees there is a great deal of fluid. Aspiration of the fluid and a long period of immobilization in a cast has been followed frequently by marked improvement, and under these conditions some of the soft tissues which have been relaxed and stretched, because of the bony changes, were allowed to shorten and tighten up. In one instance I removed a great deal of new bone from a knee and applied a plaster cast which I left on three months. In this instance the wound healed by primary union and the knee

17. Ährens: Beitrage zur Lehre der Bildung der Arthropathie Tabetia mit besonderer Berucksichtigung des Kniegelenkes, Ztschr. f. orthop. Chir. **8**: 345, 1901.

was in excellent condition for one year. At that time it became relaxed and there was little that could be done, in addition to a brace.

DR. ROBERT V. FUNSTEN, Detroit: A survey of the literature concerning Charcot joints will show that Dr. Steindler's paper has gone much more extensively into the mechanics than any other. Undoubtedly the mechanical factor is the biggest in the formation of these joints. Another point of interest is the rapidity of development of Charcot joints. One case I have followed through from the time previous to development down to the extensive involvement in the spine of the several vertebral bodies. This process according to roentgenograms took less than one year.

DR. ALEXANDER E. HORWITZ, St. Louis: There are a few points worth bringing out, and one is that in these roentgenograms the disturbance is usually seen in the lower bone of the joint, and that it is usually accomplished by interarticular pressure and from the bone above. This accounts for the higher percentage of cases in the lower limb than in the upper limb, but it also accounts for the larger amount of extra-articular bone seen around these joints. The pressure from the bone above and the interarticular pressure liberates some of the cartilage cells that Dr. Steindler spoke of seeing in the zone of provisional calcification. They are thrown outside the joints and begin to proliferate and those are the large masses of bone that are seen lying around loosely. Another point that is well to bring up is the question of trauma and the relation of injury to these joints. That comes up now and again in medicolegal cases. Some observers emphasize strongly the factor of trauma; others deny it completely. It is well to take the middle of the road policy. I have in mind one patient, a woman aged about 50, who fell off a street car and sustained an injury to the ankle. It did not improve. In two or three months it started to swell. The roentgenogram taken immediately was negative; suddenly, about the fourth month, a typical Charcot joint began to develop. In that case, the question as to whether the trauma was a factor or not is of interest. I rather think it was. I believe that trauma does enter and should be considered as a factor in the production of these cases. The underlying cause is independent and the inflammation and subsequent changes in the joint are hastened by the trauma.

DR. ALFRED J. BUKA, Pittsburgh: I have been unable to find any report of the existence of a Charcot joint in the sacro-iliac synchondrosis. I found one in a woman, aged 31, the mother of an apparently healthy full-term child delivered in difficult labor. Some time after her delivery she developed a condition in her spine, low down and to the right. She said she felt something snap in her back, had a numbness of the entire right lower extremity and experienced difficulty in getting about. She had trouble beginning low down in the back radiating to the right hip—or it would be better to say from the sacro-iliac synchondrosis down to the heel. She dragged the extremity awkwardly. There was no great amount of pain, but there was a considerably inconvenience and also a knowledge of something's not being correct, of being broad or expansive in its disturbance, making her uneasy. This woman had come to our hospital and had gone through various clinics. She had been in the dermatologic department, where blood Wassermann and Kahn tests were requested from the pathologic laboratory. The reports were negative in both instances for syphilis. When she came to the orthopedic department she was in a highly nervous condition. She had a peculiar manner of dragging her right leg. There was no knowledge of trauma, but there was clear recollection of a spontaneous onset of this disability. In spite of the negative Wassermann and Kahn reactions I felt that we should go further into the matter of what appeared as a true pathologic condition in the lower part of the back. I referred her to the neurologic department, from which came the opinion that there might be the presence of tabes. With this report I again referred her to the pathologic laboratory for spinal puncture and examination of the spinal fluid. Much to our surprise, we received a diagnosis from the laboratory of cerebrospinal syphilis with a four-plus Wassermann and four-plus Kahn reaction. From this time it was quite easy to go on with the case. The roentgenogram showed extensive bony destruction in the joint.

MADUROMYCOTIC MYCETOMA (MADURA FOOT)

REPORT OF A CASE OCCURRING IN AN AMERICAN NEGRO *

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The word "mycetoma" may be taken literally to mean "fungus tumor." In its broadest sense the term is used to describe "all growths and granulations which produce enlargements, deformities or destruction in any portion of the tissues of man or animals, which are caused by the invasion of the

Fig. 1.—Maduromycotic mycetoma.

infected area by fungi belonging to different genera and species, and which produce bodies of varying dimensions, color and shape, composed of hyphae and sometimes chlamydospores, *or other types of spores* [1] [italicized words are our own] embedded in a matrix." [2] Thus this term, coined by Carter [3] to describe the peculiar fungus foot of India, known locally as "Madura

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† Read before the Section on Dermatology and Syphilology at the Eighty-First Annual Session of the American Medical Association, Detroit, June 27, 1930.

1. Pepere, A.: Sulfungo parrasite di un "micetoma a grani neri" del piede (Carter) nostrano. Richerche, Micologiche, Sperimentali e anatomiche Sperimentale **68**: 531, 1914.
2. Castellani, A., and Chalmers, A. J.: A Manual of Tropical Medicine, ed. 3, New York, William Wood & Co., 1919, pp. 2110-2145. Chalmers, A. J., and Archibald, R. G.: A Sudanese Maduromycosis, Ann. Trop. Med. **10**: 169 (Sept.) 1916; Mycetoma and Pseudomycetomatous Conditions, New Orleans M. & S. J. **70**: 455 (Nov.) 1917.
3. Carter, H. V., quoted by Castellani and Chalmers (footnote 2).

foot," has been categorically stretched to include actinomycosis as well as maduromycosis.

The disease now known as "mycetoma" was undoubtedly observed by the ancient Indian surgeons, for the Sanscrit work "Vawdea" describes a disease of the foot characterized by swelling and the formation of fleshy tumors which discharge a peculiar fluid.[4] While many of the earlier English physicians must have come in contact with the disease, Gill and Colebrook of the Madura dispensary were the first to give an accurate description of the condition. Colebrook stated that the disease was more or less generally known in some parts of India by the term "Madura foot," presumably because of the large number of cases originating in the town of that name. Although Ballingall and Rustomji both described granules found in the disease, neither investigator seemed to consider a fungus as the causative factor. It remained for Vandyck Carter,[3] in a series of classic articles on mycetoma, to describe more fully the various types and finally to establish the fungous nature of this peculiar pathologic process.

During the succeeding years, as case after case of Madura foot had been reported and studied, it became increasingly evident that this disease was not a clinical entity caused by a single fungus. It was found not only that the white, black and red varieties as described by Carter were caused by widely different fungi but also that each color variety could be produced by many kinds of fungi, and that even the same fungus might produce either the white or the black varieties.[5] Throughout this maze of clinical cases and apparently conflicting reports of the morphologic and cultural characteristics of the fungi causing "Madura foot, it is best to follow the paths outlined by Chalmers and Archibald,[2] Pinoy,[5] and Castellani and Chalmers.[2] These authors practically agree that there are two distinct types of mycetoma as follows:

1. *Maduromycotic Mycetoma.*—Those forms of mycetoma with grains (granules) composed of nonsegmented mycelial filaments, presenting well defined walls and usually chlamydospores or other types of spores.

2. *Actinomycotic Mycetoma.*—Those forms of mycetoma with grains (granules) composed of nonsegmented mycelial filaments, in which usually the walls are not clearly defined from the contents and in which chlamydospores are absent.

Thus the fungi causing mycetoma have been divided into two broad groups:

(*a*) The Maduromycoses: The fungi found in this group are of a widely varying morphology, belonging not only to different genera but also to different classes. In this group are included all the fungi known to have caused mycetoma that consist of threadlike hyphae, of apical growth, which reproduce by spores. In this indefinite group, seventeen species have been described,[6] found in the families of *Madurella, Indiella, Glenospora, Scedosporia, Allescheria, Asperigillia, Penicillia* and *Sterigmatocystis.*

(*b*) The Actinomyces: The fungi found in this group consist of thin, much branched mycelia, which may break into segments functioning as conidia. These fungi grow very poorly and are difficult to cultivate. Thirteen species of actinomyces have been described as causing mycetoma.

The pathologic process evoked by the various types of fungi causing mycetoma is essentially the same except for the color of the extruded granule and the varying appearance of the fungus elements in situ. The granules may be either white or yellowish white, black or red, depending to some extent on the type of fungus causing the condition. It has been known for some time that each color type may be produced by various types of fungi and recently it has been shown that the same fungus may produce either the white or the black grain variety.[5] It is evident, therefore, that the mycetomas cannot be satisfactorily classified according to the kind of grain produced, as Carter [3] originally thought, but can be classified only as to the botanic and morphologic characteristics of the causative fungi.

Of the twenty-five cases previously reported in the United States, white or yellow granules have been found in twenty cases and black granules in five. Red granules have not been found in any case reported. On critical examination of these reports, although some of the cultural and morphologic data are inadequate, it would seem that seven cases,[7] certainly, and three,[8] probably, have been caused by fungi belonging to the group of maduromycoses. Of the remaining fifteen cases, only two[9] have certainly been caused by fungi belonging to the group of *Actinomyces.* The other thirteen cases cannot be classified because of inadequate data.

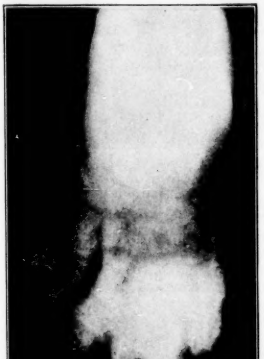

Fig. 2.—Roentgenographic appearance of living foot.

The following report deals with a case of mycetoma of the maduromycotic type. It is the twenty-sixth case of mycetoma reported in the United States:

REPORT OF CASE

History.—Thomas D., a Negro laborer, aged 55, was admitted to the Emory Division of the Grady Hospital, April 8, 1929, complaining of a swollen and painful right foot.

4. Castellani and Chalmers (footnote 2).

5. Pinoy, E.: Actinomycoses et mycetomas, Bull. de l'Inst. Pasteur **11:** 929 (Nov. 15) 1913, 977 (Nov. 30) 1913. Gammel, J. A.: The Etiology of Maduromycosis with a Mycological Report of Two New Species Observed in the United States: Arch. Dermat. & Syph. **15:** 241 (March) 1927.

6. Gammel (footnote 5).

7. Wright, J. H.: A Case of Mycetoma (Madura Foot), Tr. A. Am. Physicians **13:** 478, 1898. Boyd, M. F., and Crutchfield, E. D.: A Contribution to the Study of Mycetoma in North America, Am. J. Trop. Med. **1:** 215 (July) 1921. Gammel, J. A.: Miskdjian, Hagope; and Thatcher, H. S.: Madura Foot (Mycetoma) the Black Grain Variety in a Native American, Arch. Dermat. & Syph. **13:** 66 (Jan.) 1926. Sutton, R. L.: Mycetoma in America, J. A. M. A. **60:** 1339 (May 3) 1913. Thompson, H. L., and Ikeda, Kano: Maduromycosis: Fourth Case Reported in the United States, Arch. Surg. **16:** 764 (March) 1928. Puestow, K. L.: Maduromycosis; a Contribution to the Study of Maduromycosis with a Report of a Case of Infection with Aspergillus Nidulans, Arch. Dermat. & Syph. **20:** 642 (Nov.) 1929.

8. Pope, B. F., and Lamb, D. S.: Mycetoma: The Fungus Foot of India, New York M. J. **64:** 386 (Sept.) 1898. Lovejoy, E. D., and Hammack, R. W.: Mycetoma: Report of Four Cases, Arch. Dermat. & Syph. **11:** 71 (Jan.) 1925. Halloran, C. R.: Mycetoma in an American Negro, Arch. Dermat. & Syph. **16:** 611 (Nov.) 1927.

9. Allison, H. A.: A Case of Mycetoma, Texas State J. Med. **8:** 166, 1912. Lovejoy (footnote 8).

He was born in Alabama, but had lived in Atlanta, Ga., for the past twenty-five years. He had had the usual diseases of childhood and except for his present illness had not been ill since he was 25 years of age. There was no history of venereal infection. While at work he had frequently gone barefoot, and thorns and splinters in his feet were not uncommon.

His family and marital histories were irrelevant.

His present illness began about fifteen years before, at which time he first noticed a small flat painless tumor, about the size

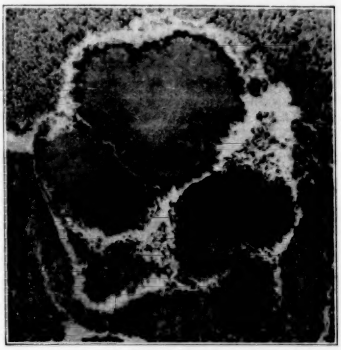

Fig. 3.—Granule in pathologic section; × 90.

of a pea, between the second and the great toe of the right foot. At intervals of from one to six months, similar areas would appear and disappear between the toes and on the bottom of the foot, producing little or no pain. Some of these areas would discharge a thick "oily" liquid. As time went on, nodules appeared in larger numbers and at more frequent intervals. Five years before, the whole foot began to swell intermittently, causing him considerable pain and discomfort. Two years before, he was treated in the outpatient department of Grady Hospital. Roentgenograms and the clinical appearance seem to have forced a diagnosis of syphilis for which he was treated with no results. The foot since that time had become larger and more painful, and he was admitted to the hospital for treatment.

Physical Examination.—The patient was thin and rather poorly nourished. With the exception of a slight general arteriosclerosis, the general physical examination revealed nothing abnormal.

The skin, other than that of the right foot, was normal. The whole right foot with the exception of the toes was enlarged to about three times its normal size (fig. 1). The enlargement was especially noticeable on the plantar surface, the sole having the appearance of a cushion. The skin on the top of the foot was rough and thick, being studded with numerous pouting liplike sinuses, each opening capping a round soft nodule. A thin, oily liquid could be expressed from the sinuses. The tumefaction was hard, nonfluctuant and not especially painful to palpation. On section and curettage of a sinus, a number of soft white or light yellow granules were found floating in a thick yellow oily pus. Each granule was about 0.5 to 1 mm. in diameter and *en masse* had the appearance of fish roe.

The urinalysis was negative. The blood showed a hemoglobin of 70 per cent and the red blood cells numbered 3,800,000 per cubic millimeter. The white blood cells numbered 10,800 per cubic millimeter, of which 78 per cent were polymorphonuclear leukocytes, 18 per cent small lymphocytes and 4 per cent large lymphocytes. The blood Wassermann reaction was negative.

Roentgenograms of the foot revealed a definite productive bone change, involving the metatarsals, tarsals and proximal phalanges of the second, third and fourth toes (fig. 2). The outlines of the bone shafts were lost, having been replaced by dense mortar-like bone. The bone production had the appearance of having started in the medulla and grown in all directions. From the foregoing observations a diagnosis of mycetoma was made, and on May 2 the right foot was amputated just below the knee. The patient had an uneventful recovery.

Pathologic Examination.—Cross-section of the amputated foot showed a marked destructive and reproductive type of degeneration. The bone could be easily sectioned with the knife and the whole foot had a cutting resistance like cartilage. There was multiple sinus formation throughout the foot from which flowed greenish yellow pus containing large numbers of white or light yellow granules.

Microscopic examination of the tissue, stained with hematoxylin and eosin, revealed the epithelium intact in all areas. Below the epithelium there was almost complete obliteration of normal tissue. Inward toward the deeper structures there was a very definite reparative reaction, characterized by fibrosis enmeshing islands of small lymphocytes and fibroblasts. In this area the eosinophil bodies often referred to were numerous.[4] Deep in the corium, surrounded by a large collection of lymphocytes, leukocytes, atypical giant cells and small areas of partial necrosis, were the picturesque "ray bodies" (fig. 3). The fungous masses (granules) were analogous in appearance to a clover leaf, with fairly regular edges. The central portion of the body was structureless, taking a light basic stain. Outside of this was a zone containing masses of radiating filaments and in some instances relatively large round or oval bodies with clear centers (fig. 4). A thin outer zone staining a deep pink was made up of indefinite, larger radiating filaments. The whole pathologic process had an appearance not unlike that of tuberculosis except for the characteristic fungus granule and the large number of eosinophil bodies (fig. 5).

The light yellow or white granules obtained from the pus when examined *en masse* had the characteristic appearance of fish roe. Each granule was about the size of a pin-head and was round, smooth and soft. Granules were easily flattened under a cover glass, each granule spreading into a more or less oval mass, made up of indefinite granulations and short filaments. There were a few oval or round translucent bodies which in some areas appeared attached to short filaments.

Mycologic Report (in collaboration with Dr. Fred D. Weidman).—Serum and blood taken with a hypodermic needle from the interior of the foot before amputation was sprayed on the

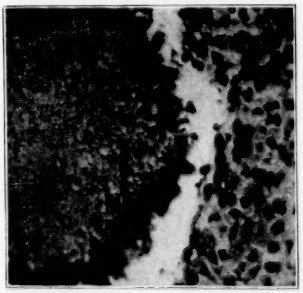

Fig. 4.—Granule in pathologic section; × 470.

surface of Sabouraud's dextrose agar. After forty-eight hours' incubation at 37.5 C., a pure culture of a fungus was noted in all the tubes. The primary growth was rapid at incubator temperature but not distinctive until the tenth day. At this time the colonies were about 2 cm. in diameter, pure white in the periphery and darker in the center, at first assuming the appearance of a white chestnut bur. As growth continued the more compact peripheral portions spread on the surface of the medium, the center becoming darker, assuming a greenish black color. The underlying medium was not definitely discolored (fig. 6). In older cultures (six to twelve weeks'

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incubation at room temperature) the growth had covered the entire agar surface and the central portion of the colony was more compact, less elevated, and grayish, with an almost black substrate. There were irregular radial furrows in the center, extending to the flat hairy growth at the edges. There was a suspicion of powderiness over the whole central portion of the colony, and in several areas were seen clumps of almost black mycelia. Some of the older cultures developed black sclerotia-like areas on the surface of the colony, which for the most part seemed embedded in a thin web of mycelia.

Examination of the material from one of these cultures showed that the sclerotia were globoid and cracked under pressure as though hollow. It was not possible to demonstrate that the interior contained asci or any other type of spore, and no special organs of fructification could be demonstrated. The condia were apiculate, were fairly large, and contained one or two granules. The mycelium was thin and delicate, was frequently jointed, and contained numerous brown granules. At the terminus of every filament there was a large ellipsoidal spore containing two large refractile granules.

In the hanging drop preparation the mycelium was rather narrow, with frequent segmentation and branching. Fine granules appeared in all parts of the mycelia. Numerous hairlike lateral branches, evidently conidiophores, were terminated by

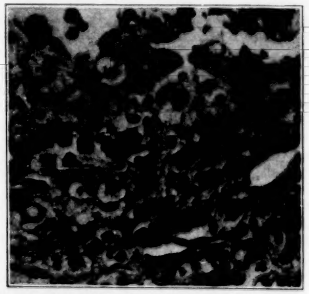

Fig. 5.—Pathologic section showing atypical giant cells; × 470.

ellipsoidal, relatively large conidia, with two or three conspicuous granules in the interior. In some areas there were as many as from two to six such conidia evidently due to the fact that several conidia had been developed at the same terminus. No other forms of fructification, such as fuseaus or chlamydospores, were noted. The conidia varied in size from 3 to 5 microns in width and 7 to 10 microns in length and the mycelium averaged about 2.5 microns in width (fig. 7).

Histologic sections of a culture to determine the nature of the black sclerotia-like areas showed that the mycelium became masked in many areas and arranged in dense spherical envelops. Within this cystlike wall as many as twenty-four spores not contained in asci were counted. It thus appears that the black structures in question were not sclerotia but probably perithecia (fig. 8).

At various times seven guinea-pigs and one rabbit were inoculated with viable cultures of this fungus. Three guinea-pigs were inoculated in the eye, peritoneum and right foot, but after six weeks there were no pathologic changes, except traumatism to the eye of one of the pigs. Four guinea-pigs were inoculated in the lung, peritoneum and anterior chamber of the right eye, and at the end of five weeks no pathologic changes were noted other than trauma. The rabbit inoculated in the anterior chamber of the right eye, at the end of four weeks, had a definite inflammatory reaction with dilatation of the vessels of the cornea, a corneal opacity and a serous conjunctival discharge. After six weeks the eye was enucleated. On incision of the cornea, thick white pus exuded, apparently under pressure. Examination of this material revealed nothing other than large masses of polymorphonuclear and mononuclear leukocytes. Three weeks' cultivation of this exudate on both plain agar and Sabouraud's mediums produced no growth of either bacteria or fungus. Microscopic examination of the eye tissue stained with hematoxylin and eosin showed the anterior part of the posterior chamber of the eye filled with an inflammatory exudate made up of polymorphonuclear leukocytes. No fungus elements or bacteria could be seen.

SUMMARY

From the foregoing report it is evident that we are dealing with a fungus having the following characteristics:

1. A fungus which causes a clinical and pathologic condition morphologically similar to the disease known as mycetoma (Madura foot). It forms grains or granules in the tissue which are rounded, smooth, soft in consistency, white or light yellow, and in which fungous elements may be seen.

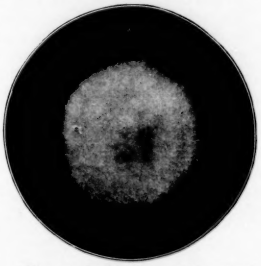

Fig. 6.—Scedosporium apiospermum: culture ten days old on Sabouraud's dextrose agar.

2. It grows aerobically on Sabouraud's medium, having a cottony appearance, at first pure white, later gray, and in older cultures a dark green or black color. In some older cultures perithecia containing spores are formed, but no definite sclerotia were noted. It grows best at 37.5 C.

3. The mycelium is thin, segmented and contains small granules. Reproduction takes place by means of a terminal oval conidium on a long graceful conidiophore. No chlamydospores, arthrospores and fuseaus are formed.

4. Viable cultures of this fungus injected into various tissues of guinea-pigs and a rabbit produced nothing other than an inflammatory reaction in the eye of the rabbit, from which the fungus was not recultivated.

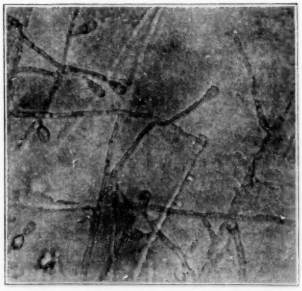

Fig. 7.—Scedosporium apiospermum: hanging drop culture in peptone water; × 470.

It is evident that the fungus in question reproduces by means of spores not contained in asci or basidia and therefore must be classified as a hyphomycete. Since it reproduces by means of true conidia borne on conidiophores it must be placed in the order of *Conidiosporales* and suborder *Sporophorinae*. And since it is distinctly a single spore-forming fungus it must be

classified in the genus *Scedosporium* or *Monosporium*.[10] The morphologic and cultural characteristics of the fungus in question agrees with the description given by Saccardo [10] of a fungus called *Scedosporium apiospermum*, except that the fungus described by Saccardo produces a pink color in culture. However, chromogenesis, mycologically speaking, is of such a variable quality, depending for the most part on the chemical constituents of the medium, that the classification of a fungus can hardly be varied on its color reactions alone. The appearance of sclerotia-like areas in our cultures force a consideration of the fungus found by Pepere,[1] which he called *Scedosporium sclerotiale* (seu nigricans). Pepere's fungus was grown from a black grain mycetoma, and in culture constantly produced black sclerotia. Pollacci,[11] and even Pepere himself, believes that *Scedosporium sclerotiale* is only a variety of *Scedosporium apiospermum*.

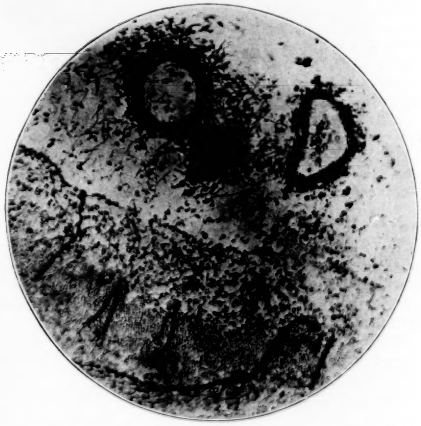

Fig. 8.—Scedosporium apiospermum: Paraffin section of six weeks' old culture on dextrose agar showing spores in perithecia. (Courtesy of Dr. Fred D. Weidman.)

CONCLUSIONS

1. A case of maduromycotic mycetoma occurring in an American Negro producing white granules is herein reported.

2. Cultural and morphologic characteristics of the fungus causing this mycetoma are presented. These characteristics classify it as a hyphomycete of the order *Conidiosporales*, suborder *Sporophorinae*, genus *Scedosporium* Saccardo 1911, called *Scedosporium apiospermum* or its probable homologue *Scedosporium sclerotiale* Pepere 1914.

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ABSTRACT OF DISCUSSION

DR. JOHN A. GAMMEL, Cleveland: Five years ago I reported a case of this kind. Since then quite a few cases have been put on record in the United States. Undoubtedly more cases occur in this country than the literature shows. Dr. Crutchfield told me last week that he had seen three more cases of this rare disease since his report in 1921. I am sure that many surgeons observe this disease and consider it a chronic granuloma. I was greatly interested that the organism found was *Scedosporium apiospermum*. This fungus was first described in Italy in 1909, and has since been found in Algiers and in Brazil. In the May number of the *American Journal of Pathology*, Gay and Bigelow described a case of Madura foot due to the same fungus in a white American. A few weeks ago I received a culture from a case of Madura foot seen in Baltimore. My study is not yet complete, but I have the impression that the organism is *Scedosporium apiospermum*, or at least closely related to it. I know that various species of the germs of *Trichophyton* may produce identical lesions. The fungi of maduromycosis, however, belong to three different classes of the vegetable kingdom, and yet they produce an almost identical pathologic picture. All these organisms have one common feature: in their defense against unfavorable cultural conditions or unfavorable conditions in the host they produce granules, which are more resistant than spores. The diagnosis of this disease is not difficult when one is able to find granules and obtain pure cultures from them. The therapy is disappointing. Compound solution of iodine, intravenously, is advised by some Frenchmen but others have failed with it. The best therapy still remains wide excision into the healthy tissue.

DR. MARION B. SULZBERGER, New York: If I understood correctly, this particular fungus did not grow in the lens of the rabbit's eye. This is interesting, for experience with fungi which are ectodermal parasites, such as those of the *Epidermophyton*, *Trichophyton* or *Achorion* groups, shows that they grow very well in the lens. The lens, like the hair, nails and skin, which the aforenamed fungi attack, is also of ectodermal origin. The fungus of Drs. Jones and Alden is not an ectodermal parasite and does not attack the lens of the rabbit's eye; in other words, it also maintains its predilection for certain tissues and avoids the others. I mentioned some of these interesting and mysterious affinities and tropisms in an article concerning experiments with ectodermal fungi (Experimentelle Untersuchungen über die Dermatotropie der Trichophytonpilze, *Arch. f. Dermat.* **157**:345, 1929).

DR. JACK W. JONES, Atlanta, Ga.: I am glad that Dr. Gammel called my attention to the work that has been done recently. I did not know that this organism had been reported in this country before. I think that some cases of the actinomycosis group are being overlooked. About a year ago we saw a case of actinomycosis in Atlanta. Before that no case had been reported in the state, but since then I think fifteen or twenty have been seen. Every case of tumor of the neck, of the groin or of any other part of the body has been sent to us since we reported that finding, and I am sure that reports of these cases have been made by various observers. I think that many cases must be present in the South, where all organisms grow freely.

10. Castellani and Chalmers (footnote 2). Saccardo, P. A.: Sylloge fungorum omnium hucusque cognitorum **22**: 1287 (quoted by Gammel).
11. Pollacci, G., and Nannizzi, A. I.: Miceti Patogeni, Sienna Stab. Arti Grafiche s. Bernadino, 1923, part 2 (quoted by Gammel).

No Time to Get Nervous.—Reproof should never be given in any other form than as advice and counsel. To rebuke quickly grows into a habit, and a child who is frequently upbraided becomes adapted to the customary censure. He accepts it as one of the necessary and inevitable conditions of childhood and ceases to give attention. He also fails to develop the self-respect which is one of the essentials of nervous poise. He feels himself an underling pitted against the world of unreasonable and troublesome adults. Interference with the behavior of boys and girls is, of course, necessary at times, but it should never be applied thoughtlessly or in anger. The same courtesy is due children as one shows adults. They should not only feel that they are loved but also that they are respected, and respect is not inferred from habitual reproof and angry threats. The successes of the young rather than their failures should be emphasized. This awakens self-respect while quickening the desire for achievement; and those who are trying to do something worth while have no time to get nervous.—Swift, E. J.: The Psychology of Childhood, New York, D. Appleton & Co., 1930.

THE RÔLE OF THE POSITIVE WASSERMANN REACTION IN GYNECOLOGIC SURGERY *

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PHILADELPHIA

The employment of the term "positive Wassermann reaction" in the title of this paper rather than the use of the word "syphilis" requires an explanation. While syphilitic infection is entirely possible in the presence of a negative Wassermann reaction, and while in certain instances a positive reaction is obtained in persons exhibiting other conditions, it is generally true that positive serologic observations, when reported by a competent laboratory, usually indicate the presence of syphilis in some form. In the routine study of patients admitted to a specialized surgical service, it is frequently the sole indication of such an infection, for often the history and physical examination, particularly in women, are not sufficiently suggestive. Accordingly, for the purposes of this study, it was thought best to base our observations on the result of Wassermann reactions of all degrees, for in this manner the percentage of error established by "missed" cases would be balanced to a certain extent by those cases exhibiting weakly positive reactions. Since these studies are from a gynecologic service, I have necessarily confined my observations to pelvic work, although the subject is equally pertinent to any field of surgical endeavor.

As emphasized by Gellhorn,[1] there are two ways in which syphilis may affect the surgical patient. First, through errors in diagnosis, whereby injudicious or useless surgery is performed; secondly, by exposing an organism damaged by syphilis to the stress and strain of a surgical procedure, whether the practitioner is aware of the presence of the disease or not. Taking routine Wassermann tests will largely obviate the first mentioned source of error; but what is to be our attitude in operating on the known syphilitic patient? What factors, if any, determine the element of risk as regards mortality and morbidity, and will these factors be influenced by preoperative treatment?

Statements have been made that syphilitic persons are poor surgical risks, that the postoperative convalescence is likely to be stormy and that the wound is especially prone to delayed union. Preoperative treatment, it has been said, will obviate any of these difficulties. Reference in the literature supported by definite statistics is rare, but individual comments and experiences have been published from time to time indicating untoward results in isolated cases.

Two outstanding contributions should be mentioned especially. Menninger [2] studied a series of twenty-two cases showing strongly positive Wassermann reactions, with special attention to wound healing. Four of the patients had preoperative treatment, and of the remaining eighteen, nine had postoperative treatment and nine had not. Seventy-two per cent of the entire series presented varying degrees of delayed healing, both in the cases treated and those untreated before operation. Of the cases in which postoperative treatment was given, 77 per cent showed delayed healing, while of those in which postoperative treatment was not given, 66 per cent showed delayed healing. Over half of the cases he considered to be surgically infected to some degree. He concluded that "patients with syphilis, as evidenced by a positive Wassermann at the time of operation, and despite the fact that they may have been treated, cannot be operated on with absolute impunity, although their postoperative course may be uneventful." Furthermore, "untreated cases of active syphilis may develop postoperative difficulty in wound healing. The rôle played by syphilis is not determined. In some cases pyogenic bacteria of low virulence grow luxuriantly; in others there is a poor tendency to union without gross infection; and in others there is no postoperative difficulty whatsoever." Finally he considers that "preoperative syphilitic treatment is desirable and postoperative treatment advisable, although the effectiveness of such treatment, as long as the Wassermann test remains positive, as an aid to wound healing, is undetermined."

Goeckerman [3] studied the records of 78 patients at the Mayo Clinic, known to have syphilis, with special reference to the postoperative course, and reviewed 5,000 unselected surgical records with reference to the incidence of syphilis, the number of patients suspected of having syphilis, and the postoperative difficulties probably attributable to syphilis in retrospect.

Of the group of 78, 50 had received some treatment either before or directly after operation; 28 had not been treated. Only 1 case showed any postoperative difficulty in wound healing, but there were 3 deaths, a mortality of 6 per cent. These cases he discusses in detail and in 2 of them he felt that syphilis was not responsible for death. In the untreated group of 28 cases, distinct difficulty in wound healing occurred in 5 (17.8 per cent); in 3 of these the difficulty was due to diagnostic errors, syphilitic lesions being incised. Hence only 2, or 7 per cent, should be recognized. No deaths were reported in this series.

Of the group of 5,000 cases, only 23 (0.46 per cent) were definitely diagnosed as syphilitic; in 1,498 (30 per cent) the Wassermann reaction was negative, and in 3,479 (70 per cent), no Wassermann test had been made. He attributed no postoperative difficulty in retrospect to syphilis, and gives no figures as to morbidity and mortality. He concludes: 1. "Patients with syphilis, who have been treated, can be operated on with impunity [although he says earlier, in discussing the three deaths, that "treatment before or after operation will not always assure 'perfectly satisfactory results'"]. 2. The patient whose operation is of long duration is on the whole a poor surgical risk, but only in proportion to the damage his tissues have sustained. He is no worse risk than any other patient with an equal amount of damage from some other cause. 3. Untreated patients rarely develop postoperative difficulties (7 per cent), but operation on a gumma will increase the damage, and reflects on the diagnostic ability of the physician."

Furthermore, he does not believe that a dose or two of arsphenamine preparatory to operation is a wise procedure, except as a protective measure for the surgeon, and that in the older patient especially a general medi-

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1. Gellhorn, George: Syphilis and Surgery, Ann. Surg. **89:** 321 (March) 1929.

2. Menninger, W. C.: Wound Healing in Syphilis, Am. J. Syph. **9:** 545 (July) 1925.

3. Goeckerman, W. H.: The Effect of Surgical Trauma in Patients with Syphilis, with Special Reference to Healing of the Postoperative Wound, Surg. Gynec. Obst. **40:** 77 (Jan.) 1925.

cal problem is presented, requiring investigation not only of the presenting symptoms but of the patient as a whole, with most damage to the cardiovascular and nervous systems.

Desirous of adding statistical information to this interesting and important subject, I present a series of facts obtained from seven years' observation in the gynecologic service of Dr. Brooke M. Anspach, at the Jefferson Medical College Hospital, Philadelphia, to whom I am indebted for the privilege of reporting this study.

TABLE 1.—*Incidence of Positive Wassermann Reactions in Admitted and Operative Cases*

	Number	Per Cent
Admissions, 1923-1929	2,622	...
Wassermann reactions obtained	2,549	...
Positive reactions	194	7.6
Operative cases	1,064	...
Positive reactions	92	8.6

INCIDENCE OF POSITIVE WASSERMANN REACTIONS IN ADMITTED AND OPERATIVE CASES

From 1923 to 1929 inclusive, there were 2,622 admissions to the gynecologic service, routine Wassermann tests [4] being obtained in 2,549 (97.2 per cent); 194 were positive, an incidence of 7.6 per cent; 1,064 cases were operative, with positive Wassermann reactions in 92 cases, an incidence of 8.6 per cent. Stokes [5] found that more than 3 per cent of the patients entering the Mayo Clinic were syphilitic. Excluded as operative cases were such minor procedures as dilation and curettement of the uterus; dilation and evacuation; radium cases, benign and malignant; excision of polypi; incisions or excisions of Bartholin's gland, and posterior colpotomies. Two hundred and seventy-eight operations were plastic and 786 abdominal in nature, either entirely or combined with plastic work (table 4).

This incidence may necessarily vary, being dependent on location, character of hospital service, and the social status of the patient.

ANALYSIS OF WASSERMANN DATA

No Wassermann reactions were obtained in 73 cases, averaging less than one in a month. This can be accounted for by the fact that patients signed releases before the studies were completed, and that sometimes

TABLE 2.—*Analysis of Wassermann Data*

Reported Wassermann tests	2,549
No Wassermann reactions obtained	73
Anticomplementary	8
Negative	2,347
Plus 4	83
Plus 3	25
Plus 2	39
Plus 1	47
Total positive	194

an emergency operation was performed and the routine Wassermann test later neglected or forgotten; 8 were anticomplementary and for some reason or other were not repeated; 2,347 were negative, and the 194 positives were grouped as follows: plus 4, 83; plus 3, 25; plus 2, 39; plus 1, 47 (table 2). Kolmer [6] has emphasized the importance of the weakly positive Wassermann reaction sometimes being the first definite link in the chain of syphilitic diagnosis; as stated before, in determining on the positive Wassermann reaction as a basis for this study, I felt that for statistical reasons any cases overlooked by reason of a negative Wassermann reaction would be balanced by weakly positive cases.

DESIGNATION OF GROUPS FOR COMPARATIVE STUDY

In the 1,064 operative cases previously mentioned, 92 patients had positive Wassermann reactions (plus 4, 43; plus 3, 12; plus 2, 18; plus 1, 19). To compare with this group, 92 of the negative Wassermann cases were selected at random by a disinterested individual, paralleling in time and type of operation the positive ones. In this manner, I feel that a cross-index of the negative Wassermann cases has been secured suitable for comparative study. I noticed such a suggestion by Gellhorn [1] soon after commencing the present study.

A brief analysis of the remaining positive Wassermann admissions is of passing interest. Thirty-three per cent occurred in pelvic inflammatory cases, which either subsided spontaneously or in which the patient refused operation or signed releases. About 20 per cent were

TABLE 3.—*Data Relative to Pregnancies, Abortions and Premature Labors*

Topic		Positive Wassermann Group		Negative Wassermann Group	
		Number	Per Cent	Number	Per Cent
Parity	Nulliparous	29	31.5	14	15.2
	Parous	63	68.4	78	84.7
Full-term pregnancies, abortions, premature labors	All pregnancies full-term	26	41.2	38	48.7
	One or more pregnancies full-term, others ending in abortions or premature labors	23	36.5	28	35.9
	All pregnancies ending in abortions or premature labors	14	22.2	12	15.3
	Abortions, premature labors, and stillbirths after fourth month (not induced)	15	23.8	10	12.8

irradiated uterine cancer patients, while 6 per cent showed pathologic conditions of the urinary tract. The remainder of the cases showed a variety of conditions, a number involving the minor operative procedures excluded from the statistical group. There were 3 cases each of cerebrospinal and of hepatic syphilis. Accompanying a case of acute gonorrheal infection was a primary lesion of the vulva, the only one observed in the entire series of admitted cases.

DATA RELATIVE TO PREGNANCIES, ABORTIONS AND PREMATURE LABORS

Comparison of parous and nulliparous women showed a higher degree of fertility in the negative Wassermann group. One might expect pelvic inflammatory conditions to be a factor here, but, as will be seen in a moment, such lesions were practically equal in the two groups, although fewer myomas were present in the negative cases. More patients had full-term pregnancies exclusively in the latter group. Patients having full-term pregnancies, abortions and premature labors were about equally divided, while the percentage in whom all pregnancies ended in abortions or premature labors was somewhat higher in the syphilitic group. A larger number had abortions, premature labors and stillbirths after the fourth month in the positive than in the negative group—a usual finding (table 3).

4. The Wassermann test employed is the original Wassermann test with the following modifications: Two antigens are employed—acetone insoluble lipoid and cholesterolized alcoholic extract of beef heart. Ice-box incubation (at 8 C. for eighteen hours) is used for fixation. Sensitized sheep cells are employed. There is a daily titration of complement and antisheep cell amboceptor. In addition to the Wassermann, a Kahn test has been done on all serums since 1928.

5. Stokes, J. H.: Modern Clinical Syphilology, Philadelphia, W. B. Saunders Company, 1927, p. 383.

6. Kolmer, J. A.: Truths About Serum Diagnosis of Syphilis, J. A. M. A. 93:1429 (Nov. 9) 1929.

V 96
1931

DATA RELATIVE TO OPERATIVE PROCEDURES AND PREDOMINANT LESIONS

Table 4 shows how closely the operative procedures paralleled each other in either group. The character of the predominant lesions was likewise similar (pelvic inflammatory disease and myomas), the remainder of the operative work being largely reparative in nature. In no case did the positive Wassermann reaction influence wrongly the indication for surgical intervention—in other words, no syphilitic lesions were operated on mistakenly, there being an indicated gynecologic procedure in each instance. None of the operative cases in the positive Wassermann group showed any evidence of primary or secondary syphilis.

TABLE 4.—*Data Relative to Operative Procedures and Predominant Lesions*

Topic		Positive Wassermann Group		Negative Wassermann Group	
Operative procedures	Section, plastic and section or dilation and curettage and section	81		80	
	Plastic operations	8		11	
	Nephrectomies	2		0	
	Vaginal hysterectomy	0		1	
	Vaginal myomectomy	1		0	
		Number	Per Cent	Number	Per Cent
Predominant lesion	Inflammatory	43	46.7	41	44.5
	Myomas present	41	44.5	30	32.5

PREOPERATIVE COMPLICATIONS, TREATMENT AND PREOPERATIVE DAYS

With the exception of secondary anemia, systemic preoperative complications were more numerous in the positive Wassermann group. This might be regarded as suggestive of the activity of the syphilitic infection, especially in the matter of cardiovascular changes and disturbed reflexes (table 5).

Fifteen patients received preoperative antisyphilitic treatment of some sort. Six received neoarsphenamine only; 5 received mercury by inunction and iodides; 3 received a combination of neoarsphenamine, mercurial inunctions and iodides, and one received "mixed treatment" by mouth. The duration of treatment varied from a few days to several weeks, the injections of neoarsphenamine ranging from 0.3 to 0.9 Gm., the mercurial inunctions a drachm daily, and the iodides varying from 5 to 20 grains three times daily. No patients receiving preoperative treatment were treated during their postoperative period but all were referred to the dermatologic outpatient department on discharge. Three patients not treated before operation were treated during their convalescence in the ward and then referred to the dermatologic clinic, as were the remainder of the entire positive Wassermann group. No patient, therefore, was treated until the Wassermann reaction became negative, before being operated on.

TABLE 5.—*Preoperative Complications and Preoperative Days*

	Positive Wassermann Group	Negative Wassermann Group
Anemia	13	15
Cardiovascular and renal	14	9
Upper respiratory tract	2	1
Disturbed reflexes	9	0
Pleural effusion	1	0
Pulmonary	0	1
Average	13.4 days	10.6 days
Longest	122 days	54 days
Shortest	1 day	1 day

Antisyphilitic Treatment and Preoperative Days	Treated Group (15 Cases)	Untreated Group (77 Cases)
Average	35.7 days	9.1 days
Longest	122 days	34 days
Shortest	2 days	1 day

The average number of preoperative days was greater in the positive than in the negative group, and the average number in the treated group greater than in the untreated group. This was not because of treatment for syphilis alone but because of anemia and toxemia due to the underlying pelvic condition—although advantage was taken of this waiting period to administer treatment before operation was performed (table 5).

POSTOPERATIVE COMPLICATIONS AND POSTOPERATIVE DAYS

From 40 to 45 per cent of cases having preoperative complications developed postoperative difficulty of some character, but this was equally true of the two groups, indicating that the predisposition to such disturbances is influenced no more by syphilis than by any other etiologic factor.

Postoperative convalescence was considered from the standpoint of systemic complications and wound healing. "Uncomplicated convalescence" meant no systemic complications or imperfect wound healing, while "complicated convalescence" included a systemic upset, wound trouble, or both. Wound healing has been classified rigidly, according to the method in use at the Woman's Hospital in New York, and advanced by Goff [7] in a paper presented some years ago as a part of the standardization program of the American College of Surgeons. Any wound is excluded from class A in which there is even a discharge of serum after the tenth day. This places quite a number of wounds in class B, though slight infection only is present, and the patient is not detained in the hospital unduly. Drainage cases and markedly infected incisions fall into class C, but twenty-four hour drainage cases without infections are grouped in Class B.

TABLE 6.—*Postoperative Complications and Postoperative Days*

Topic		Positive Wassermann Group		Negative Wassermann Group	
		Number	Per Cent	Number	Per Cent
Uncomplicated convalescence		44	47.8	54	58.6
Complicated convalescence		44	47.8	37	40.2
Deaths		4	4.3	1	1.08
Class A incisions		60	68.1	73	80.2
Class B incisions		15	17.1	8	8.8
Class C incisions		13	14.7	10	10.9
		2 infected	2.2	6 infected	6.5
Average number postoperative days	All cases	21.2 days		19.5 days	
	Uncomplicated cases	16.3 days		16.2 days	
	Complicated cases	25.7 days		24.4 days	

Wound healing, as typified by class A incisions, was superior in the negative Wassermann cases, but there was practically no difference when grouping the A and B incisions together (from 85 to 88 per cent). Of the class C wounds, eleven in the positive Wassermann group were due to drainage of the pelvis for surgical reasons, one was an infected clean case, and one was a complete breakdown of a trachelectomy wound on the twelfth day, with consequent resuture (2.2 per cent). In no case in either group was there a complete breakdown of the abdominal or perineal incisions. In the negative group, four class C incisions were caused by

7. Goff, Byron: An Analysis of Wound Union in Three Thousand Abdominal Incisions from the Clinic of the Woman's Hospital, Surg. Gynec. Obst. **41**: 728 (Dec.) 1925.

surgical drainage, and six were infected clean cases—a higher number than in the syphilitic group (6.5 per cent). I can recall several cases in which there was breaking down of the abdominal incision in clean cases with the presence of pus, and several cases of hemorrhage from cervical operations occurring from the seventh to the twelfth day, in patients in whom there was no indication of syphilis. These cases did not fall into the cross-index group and hence do not enter into these statistics. There was practically no difference in the number of postoperative days in either group, and—this is a striking finding—no undue prolongation of postoperative hospital days in the positive Wassermann group, as compared with the negative cases (table 6).

TABLE 7.—*Systemic Postoperative Complications (Recovery)*

Topic	Positive Wassermann Group	Negative Wassermann Group
Upper respiratory tract infection	10	12
Pulmonary conditions	3	3
Cystitis	3	4
Phlebitis	1	1
Peritonitis	1	0
Myocarditis	1	1
Excessive nausea and vomiting	1	1
Ureteral and fecal fistulas	1	0
Unexplained fever without signs	1	1

Systemic postoperative complications showed practically no variation in either group (26.5 per cent). The majority were low-grade infections of the upper respiratory tract and about 15 per cent were associated with B or C incisions (table 7).

The mortality will be discussed in a later paragraph.

COMPARISON OF MORBIDITY IN CASES TREATED AND UNTREATED BEFORE OPERATION

Regarding complicated and uncomplicated cases, there was practically no difference in the postoperative convalescence of those treated and not treated prior to operation (table 8). There was a higher percentage of class A incisions in the untreated group, but two clean cases presented difficulty in wound healing (2.6 per cent), a circumstance not occurring in the treated group. Of the thirty-eight complicated cases in the untreated group, systemic complications and difficulty in wound healing were about equally divided. Of the six treated cases developing postoperative complications, two were systemic and four were solely incisional. The important finding is that the average number of postoperative hospital days did not vary in either group, whether treated or not, paralleling closely the positive and negative groups taken as a whole—the presence of syphilitic infection apparently not prolonging the patient's stay in the hospital as compared with the negative cases. Whether a longer course of preoperative antisyphilitic treatment would have shown different results is a question that cannot be answered from the results of this study.

TABLE 8.—*Comparison of Morbidity in Cases Treated and Those Untreated Before Operation*

Topic		Treated Group, 15 Cases		Untreated Group, 77 Cases	
		Number	Per Cent	Number	Per Cent
Uncomplicated convalescence		7	46.6	37	48.0
Complicated convalescence		6	40.0	38	49.3
Deaths		2	13.3	2	2.6
Class A incisions		7	53.8	53	70.6
Class B incisions		5	38.4	10	13.3
Class C incisions		1	7.7	12	16.0
				2 infected	2.6
			Days		Days
Average number postoperative days	All cases		22.1		21.3
	Uncomplicated cases		17.3		16.1
	Complicated cases		27.8		25.5

COMPARISON OF MORTALITY IN RESPECTIVE GROUPS

A study of mortality statistics is frequently confusing because opposing factors must be considered. Five operators have been concerned in the cases tabulated, meaning a variation of technic to a certain extent. The type and severity of the operative condition encountered is likewise a variable factor.

Twenty-seven deaths occurred in the entire series of 1,064 operative cases, 2.53 per cent. In the 972 negative Wassermann cases, there were 23 deaths, 2.36 per cent.

In the group of 92 positive Wassermann cases there were 4 deaths, 4.34 per cent; in the cross-index group of 92 negative Wassermann cases there was 1 death, 1.08 per cent. In 15 cases treated before operation there were 2 deaths, 13.3 per cent, while in 77 untreated cases there were 2 deaths, 2.59 per cent (table 9).

In the face of these figures it would seem as though preoperative treatment raised the mortality, and a word of explanation is in order. One of these deaths occurred in a woman, aged 34, having a plus 3 Wassermann reaction, with pelvic inflammatory disease in whom the sigmoid was accidentally perforated at operation, death occurring on the fifth day from peritonitis. Syphilis probably played no part in this death. The other death occurred in a woman, aged 38, having a plus 4 Wassermann reaction, who was operated on for pelvic inflammatory disease. Death occurred four hours after operation and was ascribed to cardiac failure. There was no autopsy. While the preoperative examination disclosed no abnormality, it is quite possible that syphilitic cardiovascular damage was present and undetected and that this contributed to the catastrophe.

TABLE 9.—*Comparison of Mortality in Respective Groups*

Topic	Cases	Deaths	Per Cent
All operative cases	1,064	27	2.53
All negative Wassermann cases	972	23	2.36
Positive Wassermann cases	92	4	4.34
Group of negative Wassermann cases	92	1	1.08
Treated positive Wassermann cases	15	2	13.3
Untreated positive Wassermann cases	77	2	2.59

In the untreated group, one death occurred in a woman, aged 41, having a plus 4 Wassermann reaction, twenty-four hours after an operation for pelvic abscess. She was toxic, peritonitis being present when she was operated on, and this death cannot with fairness be attributed to syphilis. The other death, in a woman, aged 60, having a plus 1 Wassermann reaction, occurred postoperatively on the twelfth day, from heart failure, after a complete hysterectomy for cancer of the fundus. She was considered a poor risk preoperatively, and it is very likely that the cardiovascular system reflected the syphilitic infection under the stress of an operative procedure, even though the calamity was delayed.

The death in the negative Wassermann series occurred from shock due to uncontrollable hemorrhage, during a hysterectomy for fibroids in a woman with mitral stenosis.

There were 22 deaths in the remaining 880 cases (deducting the 184 cases of the positive and negative Wassermann groups), or 2.5 per cent. The causes assigned were peritonitis, 12; cardiac failure, 4;

V 96
1931

pulmonary collapse, adynamic ileus, streptococcemia, embolism, heat stroke, chloroform anesthesia one each. The fatal manifestations in certain of these cases were not unlike those attending the deaths in the positive Wassermann group just described. If, then, the two deaths in the positive Wassermann group, which could hardly be attributed to syphilis, are deducted, the mortality would be 2.17 per cent, which closely parallels the mortality figure for the entire series and for the negative Wassermann cases.

SUMMARY AND CONCLUSIONS

1. A routine Wassermann test should be made on all patients admitted to a gynecologic or general surgical service. A history of syphilitic infection is usually lacking and physical signs may be inconclusive, but a positive Wassermann reaction is a helpful indication of the presence of some type of syphilitic infection and may point to dangerous tissue damage in the organism itself. The incidence in the entire series was 7.6 per cent.

2. The incidence of syphilis in the operative cases, as indicated by the positive Wassermann reaction, was 8.6 per cent. None of the patients exhibited primary or secondary manifestations of the disease and no diagnostic operative errors were made by reason of its presence, which emphasizes the desirability of this routine study.

3. Preoperative complications, especially of the cardiovascular and nervous systems, are more likely to be present in patients exhibiting positive Wassermann reactions. Preoperative hospital days in our series, while of longer duration in the positive Wassermann group and especially in the cases treated before operation, were dependent on underlying toxic or anemic conditions and were not prolonged by reason of antisyphilitic treatment.

4. From 40 to 45 per cent of patients having preoperative complications developed some sort of postoperative difficulty, either incisional or systemic. This was true of both groups and would indicate that the predisposition exists equally, whether the preoperative disturbances are dependent on syphilis or on other etiologic factors.

5. Patients with negative Wassermann reactions exhibited a higher degree of fertility. Abortions, premature labors and stillbirths (after the fourth month) were more pronounced in the positive Wassermann group.

6. Postoperative wound healing, as evidenced by class A incisions, was somewhat better in the negative Wassermann group. Considering A and B wounds collectively, the difference was negligible. Class C wounds in both groups were practically all drainage cases. The average number of postoperative days in either group was not influenced differently by the wound healing.

7. Comparison of wound healing between the cases treated and untreated before operation showed a greater percentage of class A incisions in the latter group. Treatment prior to operation apparently possessed no material advantages in wound healing, but it must be remembered that in no case was therapy maintained until the Wassermann reaction became negative before operation. The postoperative periods were alike in the two groups.

8. Systemic postoperative complications with recovery were of the same number and variety in the two groups. This would indicate that it is the amount of damage that the body tissues have sustained rather than the etiologic factor that determines the patients' resistance to such complications.

9. Of practical importance to the surgeon is the average number of postoperative hospital days, which showed practically no difference in the two groups or between the treated and the untreated cases. This finding is worthy of emphasis and suggests that the convalescent period either in uncomplicated or in complicated cases is not prolonged by syphilitic infection as manifested by the positive Wassermann reaction.

10. The mortality appears definitely higher in the positive Wassermann group, and proportionately higher in the treated cases. The deduction of the two cases in which the fatal result cannot with fairness be ascribed to syphilis places the matter in a different light and indicates a mortality similar to that of the entire series and of the negative cases as well (2.5 per cent).

11. Treatment prior to operation should not be indiscriminately advised or given as a matter of routine simply because the patient has a positive Wassermann reaction. Each case should be considered individually, the therapy employed being dependent on the amount of damage to the organism as a whole and not merely on the presence of syphilis. The cooperation of the syphilologist is desirable, helpful and advisable.

12. This study leads me to conclude that the patient with syphilis, as indicated by a positive Wassermann reaction and studied in a gynecologic service, is not a greater risk merely because of the syphilitic infection. It is the amount of damage to the organism as a whole that is the vital factor concerned in evaluating that risk. Furthermore, diagnostic errors can be avoided by thinking of syphilis in the light of its widespread manifestations.

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ABSTRACT OF DISCUSSION

DR. JOHN H. STOKES, Philadelphia: Dr. Scheffey has effectually closed the door on the old bugaboo that an operative wound in a patient with syphilis should not heal well. The risk does not come in incising the apparently normal tissues of a person with syphilis but on cutting a gumma unawares. It is the gumma that has produced the disagreeable and unexpected in surgery in the past, particularly in bone and in the soft tissues. Dr. Scheffey has left the surgeon free to operate, with the understanding that he evaluates a case with syphilis from the medical rather than the purely surgical standpoint. He interprets the cardiovascular condition, with assistance, if necessary, and does not operate on the patient if she has cardiovascular disease or is a nervous wreck. The finding of a positive blood Wassermann reaction in a gynecologic case suggests to the syphilologist, first, a reconsideration of the diagnosis. It is particularly important to consider the central nervous system, which is the great false symptom producer, and the liver. Practically everything that can happen in the upper part of the abdomen can be mimicked by syphilis without a surgical background. If one is limiting oneself to the pelvis, one will not operate on chancres of the cervix in the expectation of finding them carcinomas. A negative Wassermann reaction does not eliminate syphilis. Particularly is that true of neurosyphilis. The higher one goes in the abdomen the more important the negative Wassermann reaction becomes. Neurosyphilis and cardiovascular syphilis will provide the most unpleasant postoperative surprises. If the Wassermann reaction is positive and one decides that preoperative treatment is indicated, I would suggest that it be done in the early cases for the protection of the physician and his staff. A single arsphenamine injection in a comparatively young and reasonable intact patient will give complete protection from any risk

during the operation and will not appreciably harm the patient. Preoperative treatment is contraindicated in patients who have evidence of cardiovascular syphilis. Particularly is the brief preoperative preparation contraindicated; namely, the giving of arsphenamine. The patient may be precipitated at once into what is called a Herxheimer flare-up and death. I would urge postoperative treatment of the patient whose syphilis is discovered as part of the examination for operation.

DR. JAMES R. MCCORD, Atlanta, Ga.: In the gynecologic clinic in Atlanta, 20 per cent of the Negro women operated on have syphilis. I do not think that I have ever seen a case in which the syphilis in itself was the cause of any complication. Occasionally some of the complications of syphilis are overlooked, but syphilis does not increase the maternal hazard in itself and does not increase the time of the healing of the wound; it does not cause more infection, and it does not complicate the operative procedure. One, two or three doses of neoarsphenamine are given before they are operated on.

DR. LEWIS C. SCHEFFEY, Philadelphia: There is one point that perhaps I did not make clear. All the patients with positive Wassermann reactions following operation, on completion of convalescence, are referred to the syphilologic clinic for follow-up treatment. I am glad to know Dr. McCord's experience is much like my own. This subject has been a matter of great concern, particularly the point Dr. Stokes referred to, the protection of the physician. Since the first of the year the protective injection has been a routine procedure.

HYPERGUANIDEMIA IN TETANY*

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Tetany is a clinical syndrome characterized by a hyperexcitability of the striped musculature. It has been described as sequential or concomitant to many pathologic, physical and psychic conditions. It has been observed in acidosis as well as in alkalosis. It is seen in pregnancy, in menstruation and in lactation. It occurs with inflammation of the female sex organs. It can be experimentally produced by parathyroidectomy. It is often a part of the picture of spasmophilia. Both spasmophilia and tetany are seen with especial frequency in rachitic children. Erdheim has found parathyroid hyperplasia in rickets, and has produced rickets by removing the parathyroids from young rats.

The body chemistry in tetany has received much attention of late. A deficiency of the blood calcium has been repeatedly reported. For a time, calcium deficiency was taken as the criterion of a true tetany. Recently, instances of the existence of all the usual tetanic manifestations with a coexisting normal blood-calcium level have been reported. Such a condition can be experimentally produced by hyperventilation. The lowered carbon dioxide tension has been considered responsible for the tetany of hyperventilation.

Calcium deficiencies are known to exist in diabetes and in hemorrhage, as well as following the injection of phosphates. Tetany is not characteristic of such calcium deprivations.

On the other hand, the administration of calcium regularly relieves the symptoms of tetany regardless of the cause or the height of the blood calcium. Calcium may exert a nonspecific effect by depressing the neuromuscular connections in striated muscle.[1] Magnesium has the same effect. It is apparent that the relief of tetanic symptoms by calcium cannot be taken as evidence for calcium deprivation as a cause of the disease.

Some have assumed that calcium may combine with a hypothetic toxic substance present in the blood. This toxin would be accounted for by the lack of the detoxifying parathyroids. The beneficial effects of kaolin have been ascribed by Dragstedt to the same detoxifying action. Larson and Elkourie[2] did not get this beneficial result with kaolin in their experimental parathyroid tetanies. Larson calls attention to the calcium administered by Dragstedt in the form of Ringer's solution and in calcium lactate used to supplement the kaolin. According to Pfiffner and Myers,[3] kaolin did not help parathyroidectomized dogs. They did not detect any absorption of guanidine by kaolin.

Tetany has always been connected with the feeding of meat and meat products. Carnivorous animals develop tetany most easily. Feeding meat, especially putrid meat, to animals deprived of their parathyroids elicits tetanic symptoms. Avoidance of meat lessens the likelihood of tetany.

Guanidine is one of the split products of meat. Its final destination is urea.

Paton and Sharpe[4] reported an increase in blood guanidine in tetany. Major, Orr and Weber[5] could not confirm this but reported that urea nitrogen and nonprotein nitrogen were increased in the blood of parathyroidectomized dogs. These authors also found guanidine increased in nephritis, especially in the uremic state. Minot and Cutler[6] found the guanidine level elevated in liver degenerations, such as chloroform poisoning and "catarrhal jaundice." They found increased blood guanidine in eclampsia and preeclamptic toxemia. All their patients had low blood sugar readings. It appeared that the improvement of these patients by intravenous administration of calcium gluconate was due to increasing the sugar of the blood. Major, Orr and Weber produced tetany in dogs by injecting methyl guanidine. Ellis[7] confirmed the good effects of dextrose in tetany. He worked with parathyroidectomized cats. According to him, guanidine acts as a strong base to combine with dextrose. Injections of guanidine sufficient to produce tetany were harmless when injected into frogs simultaneously with dextrose-guanidine. Ellis found the guanidine content of the brains of parathyroidectomized cats to be very high. Sharpe found guanidine in the intestine of tetanic children.

According to Grunwald, Paton and Sharpe's method of measuring the guanidine in the blood failed to differentiate guanidine from creatinine. After removing the creatinine with charcoal, Grunwald found no increase of guanidine.

Paton and Sharpe regard from 8 to 10 mg. of guanidine per hundred cubic centimeters of blood as a normal reading.

* From the Department of Medicine, Rush Medical College, and Laboratory of Physiological Chemistry and the Departments of Pathology and Bacteriology, University of Illinois College of Medicine.

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2. Larson, E., and Elkourie, L. A.: Rôle of Toxins in Parathyroid Tetany, Am. J. Physiol. **82**: 231 (Dec.) 1927.

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V 96
1931

REPORT OF CASE

Our patient is a married woman, aged 21. At the age of 14 she married her present husband. In 1925, her appendix was removed. The wound drained pus for two months. An operation for adhesions was performed in 1926. In the interval between the operations her husband contracted gonorrhea.

She first consulted us in 1926 for severe dysmenorrhea. She was well nourished. The only abnormal observations at that time were chronically inflamed tonsils and tenderness over both lower abdominal quadrants. The fallopian tubes were enlarged and tender. She developed persistent abdominal pain. In September, 1928, she had quinsy.

One of us (E. F. T.) was called to see her because of severe dysmenorrhea, Nov. 17, 1928. She had been extremely irritable all day. She had had tetanic contractions of the hands and feet for five hours followed by a convulsion lasting one-half hour. Her face was pasty white and swollen. Her feet were rigidly extended and rotated inward. Calcium chloride, 1 Gm., intravenously, relaxed the spasm. She went to sleep.

Chemical Analyses of the Blood

Date, 1928	Condition	Diet	Medication	Guanidine Bases in Blood, Mg. per 100 Cc.	Calcium in Blood, Mg. per 100 Cc.	Other Observations in Chemical Examination of the Blood
11/20	Third day of tetany	Full	Calcium lactate, 120 g., by mouth daily	....	11.7	Urea nitrogen, 11.25; urea, 24.07; creatinine, 1.45; sugar, 100; chlorides, 565; uric acid, 2.24
11/23	No spasms for two days	Full	None	....	11.3	CO_2, 42% by vol.; chlorides, 565
11/27	Daily tetanic spasms	Meat free	None	0.31	11.39	Urea nitrogen, 11.75; urea, 25.16; CO_2, 53% by vol.; uric acid, 2.6; creatinine, 1.5
12/11	Spasm the night before	Meat free	None; calcium for two days	0.269	....	Urea nitrogen, 10.9; urea, 23; CO_2, 63% by vol.
1929 1/26	No attacks; occasional "drawing" in thumbs	Meat free	No calcium for two weeks	0.60	....	
3/ 1	No attacks	Full	No calcium	0.417	10.31	
5/28	No attacks	Full	No calcium	0.312	8.96	

The contractures returned the next day and were so severe as to cause pain. She had another convulsion, which was relieved by 16 Gm. of calcium gluconate by mouth. Trousseau's sign was obtainable between spasms.

She was removed to the West Suburban Hospital, where she remained thirteen days. A milk and vegetable diet was instituted. Calcium lactate, 12 Gm., was given daily. Spasms were controlled by parathyroid extract-Collip or calcium gluconate or calcium chloride administered intravenously. The chemical analyses of the blood are given in the accompanying table. On admission the hemoglobin was 85 per cent, red blood cells 5.0 and white blood cells 15.85. Of the white cells, 76 per cent were polymorphonuclears and 24 per cent were lymphocytes. The urinary volume varied from 1,500 to 2,100 cc. and contained from 3 to 5 Gm. of chlorides. November 24, she was much improved and had had no contractures for several days. She developed acute tonsillitis with fever of 102 F. and, coincidentally, the tetanic manifestations reappeared.

During the most severe attacks, her respirations increased in frequency and depth. She complained of difficulty in breathing (diaphragmatic or intercostal muscle involvement?). She was very weak following a spasm.

She left the hospital, November 30. The spasms were controlled at home by viosterol, 4 minims (0.24 cc.) and calcium lactate, 8 Gm., three times a day.

Dysmenorrhea and lower abdominal pain continuing, the patient returned to the hospital, December 15. Through a misunderstanding, she did not receive calcium lactate for twenty-four hours. Severe contractures appeared and were promptly relieved by calcium lactate. A supravaginal hysterectomy and bilateral salpingectomy with removal of one ovary was performed by Dr. Joseph Nortell, December 16. Persistent postoperative vomiting necessitated cessation of oral medication. Parathyroid extract-Collip, 0.5 cc., was given twice daily. There was no tendency to tetany. She made a good convalescence. The parathyroid extract was stopped two weeks after the operation. Calcium was not given. Meat was allowed once a day.

She has had several seizures since last leaving the hospital, which a few doses of calcium would relieve. During one of her attacks, she was given morphine by another medical attendant. It did not relieve. She asked for calcium lactate, and relief was prompt.

Analyses of the blood showed no lack of calcium. The nitrogenous products were always present in normal amounts. The chloride reading and carbon dioxide tension never indicated a tendency to alkalosis.

The amount of guanidine bases was constantly increased. Guanidine estimated in four normals by the same method was: 0.25, 0.20, 0.24 and 0.26 mg. The guanidine was highest when she was at home and having attacks infrequently. However, at that time she was completely under calcium control.

At the time of the last determination she had not taken calcium for one month. She had been on a general diet, including meat, for some weeks. There was complete freedom from symptoms and yet the guanidine level was higher than in any of the normal cases. Is this an expression of latent tetany?

SUMMARY

In a patient with the clinical manifestations of tetany, the calcium of the blood was quantitatively always within normal limits.

The guanidine bases in the blood were always increased.

Either calcium or parathyroid extract-Collip controlled the attacks.

GUANIDINE ANALYSES

Preliminary chemical analyses were made for guanidine by the methods of Pfiffner and Myers and of Weber. Weber's [8] results were confirmed: that potassium ferricyanide, replacing potassium ferrocyanide and hydrogen peroxide in the reagent, gave a greater depth of color and increased the sensitivity of the analysis. The final determinations were made according to Major and Weber.[9]

The stock solution from which the guanidine standard is obtained is made by dissolving 0.1525 Gm. of guanidine carbonate and diluting to 100 cc. with tenth normal hydrochloric acid. This amount of guanidine carbonate varies slightly from that calculated by Major and Weber. The dilute standard solution is made according to the original paper.

It was found that a greater yield of guanidine was obtained in every case in which the charcoal was left in contact with the alcohol over night. This is suggested as a routine procedure.

We found that the alcoholic extract charred readily if evaporated on a boiling water bath, confirming the observation of Major and Weber. The dark residue produced interferes with the colorimetric determination. The best procedure to avoid overheating is to keep the

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9. Major, R. H., and Weber, C. J.: The Probable Presence of Increased Amounts of Guanidine in the Blood of Patients with Arterial Hypertension, Bull. Johns Hopkins Hosp. **40**: 85 (Feb.) 1927; The Possible Increase of Guanidine in the Blood of Certain Persons with Hypertension, Arch. Int. Med. **40**: 891 (Dec.) 1927.

temperature of the water bath between 90 and 95 C. and to aid the evaporation by means of a current of air.

We determined creatine and creatinine on a portion of the final solution, according to Major and Weber, by Folin's standard methods. No correction was necessary for preformed creatinine, as our color comparisons were made within five minutes. A correction was made for creatine as determined by Major and Weber.

By this method, we have been able to recover guanidine added to the blood in varying amounts from 0.2 to 1.0 mg. per hundred cubic centimeters, with an average recovery of 85 per cent.

To obtain normals for our results, we analyzed blood from four convalescing surgical patients and obtained 0.25, 0.20, 0.24 and 0.26 mg., respectively. These normals are slightly higher than previous reports; this may be due to the type of patient.

The guanidine analyses made on the blood of our patient are shown in the table.

CONCLUSIONS

Since hyperguanidinemia has been found in parathyroidectomized animals, possibly its presence in human tetany has an etiologic significance.

122 South Michigan Avenue.

Clinical Notes, Suggestions and New Instruments

PHENYLHYDRAZINE POISONING: REPORT OF CASE*

D. H. McNAMARA, M.D., AND W. D. SANSUM, M.D.
SANTA BARBARA, CALIF.

Since Morawitz and Pratt,[1] in 1908, produced an experimental anemia in dogs with phenylhydrazine, and Eppinger and Kloss [2] ten years later used this drug in the treatment of polycythemia vera in man, it has gained considerable popularity in the treatment of the latter condition. Owen [3] in 1924 and 1925 reported the first cases in America to be treated with phenylhydrazine. These early writers, and most subsequent ones, especially Hurwitz and Levitin,[4] point out the dangers connected with the use of the drug. They emphasize that it should be given only when it is possible to check the results of treatment by frequent blood counts.

Our case is presented to emphasize the following points: (*a*) The diagnosis of polycythemia vera should be definitely established before treatment with phenylhydrazine is begun. (Harrop [5] has pointed out that many chronic cardiac and lung conditions may produce a blood picture simulating polycythemia vera.) (*b*) The patient should be carefully observed during the administration of phenylhydrazine. (*c*) The dose required to produce toxic symptoms may be very small. In our case 0.2 Gm. daily was given for only eight days. This case is interesting also because the rise in the white cell count, which is generally given as the first indication of toxicity, was not observed.

REPORT OF CASE

An American housewife, aged 56, who had a family history of heart disease (type unknown) but none of blood dyscrasias, had had pneumonia, yellow fever, scarlet fever, neuritis and tuberculosis, from all of which she had recovered uneventfully. Her personal habits were excellent. The remainder of the past history was irrelevant.

For one year she had noted some dyspnea and precordial pain on exertion, also a dry hacking cough and frequent attacks of flatulence during the last six months. Three weeks before our examination she began to have severe suboccipital headaches and to fatigue easily on the slightest exertion. She never had any noticeable edema or cyanosis, nor had she ever been dizzy.

Two weeks before consulting us she had seen an osteopath because of her headaches and weakness. Her blood pressure was reported to be over 200. One blood count had revealed a hemoglobin of 103 per cent and 5,120,000 red cells. He made a diagnosis of polycythemia vera and gave her 1 grain (0.065 Gm.) of phenylhydrazine hydrochloride three times daily. She was not told to return to his office, nor did he call on her at home.

Five days after beginning the medication she had "fainting spells" and a sense of oppression and dull pain in the precordium and epigastrium. These symptoms became progressively more severe. Eight days after beginning treatment she first noticed that her urine was red. This frightened her so that she stopped medication at once. Her symptoms, however, steadily grew more severe. She became progressively weaker and her fainting spells occurred three or four times daily and lasted from fifteen to thirty minutes. She had almost continual precordial distress; the urine continued red for a period of six days. On the seventh day after stopping the phenylhydrazine she consulted us.

She was obese, very pale, dyspneic and cyanotic while at rest in bed. The head and neck revealed nothing save the unusual pallor of the mucous membranes. The lungs had slight dulness with a few crepitant râles over both bases posteriorly. The heart was enlarged, the left heart border being 12.5 cm. from the midsternal line (just at the anterior axillary line), the right border 3 cm., and the great vessels 5.5 cm. in diameter. There was a marked accentuation of the aortic second sound, no murmurs and an occasional compensated extrasystole. The pulse rate was 100 and the blood pressure was 170 systolic and 100 diastolic. No free fluid was present in the abdomen. The liver, spleen and kidneys were not palpable. Slight pitting edema of the feet and ankles was present. There was no clubbing of the fingers. The urine at this time contained a trace of albumin but was otherwise negative; no red blood cells or chemical blood, and no urobilin were found. The results of the blood examination are shown in the accompanying table.

Blood Examination

Date	Red Blood Count	White Blood Count	Hemoglobin	Comment
7/ 4/29	5,120,000	.....	103%	Done by osteopath and reported by patient
7/19/29	3,100,000	7,800	65%	After 8 days of medication and 7 days of rest
7/21/29	2,510,000	7,800	58%	
7/22/29	2,980,000	.....	58%	
7/23/29	2,810,000	7,500	57%	Patient pasty white; mucous membranes barely tinged with pink
7/24/29	3,230,000	9,700	60%	
7/25/29	3,160,000	8,400	63%	
7/26/29	3,410,000	.....	63%	Blood pressure 164/100
8/30/29	4,150,000	.....	65%	Blood pressure 210/?
10/ 8/29	4,150,000	5,100	65%	Differential count normal
5/22/30	5,050,000	8,400	87%	Differential count normal

A tentative diagnosis of phenylhydrazine poisoning and hypertensive heart failure was made.

She was put to bed, digitalized by the intravenous method within twelve hours, and given a diet rich in vitamins and minerals.

The following day (with digitalization complete) there was no edema of the ankles and feet, no dulness nor râles in the lungs, no dyspnea nor cyanosis at bed rest, and the pulse rate had decreased from 100 to 70 beats per minute. At this time the patient felt greatly improved and wanted to go home.

* From the Santa Barbara Cottage Hospital.

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2. Eppinger, H., and Kloss, K.: Zur Therapie der Polyzythämie, Therap. Monatsh. **32**: 322-326, 1918.
3. Owen, Trevor: Treatment of Erythremia with Phenylhydrazine, J. A. M. A. **85**: 2027-2032 (Dec. 26) 1925.
4. Hurwitz, S. H., and Levitin, J.: The Value of Phenylhydrazine in the Treatment of Polycythemia Vera, Am. J. M. Sc. **177**: 309-319 (March) 1929.
5. Harrop, G. A., Jr.: Polycythemia, Medicine **7**: 291-344 (Aug.) 1928.

V 96
1931

Great difficulty was experienced in persuading her to remain in the hospital seven days, at the end of which time she insisted on leaving.

The course of the blood picture is shown in the accompanying table.

The differential count was constantly normal. The stained smear always showed anisocytosis and poikilocytosis with achromia. No other changes in the red cells were noted. After the admission specimen no albumin was found in the urine, which was also constantly negative for casts, blood and sugar.

Ten months after leaving the hospital the patient returned, at our request, to check up on her progress. The blood observations at this time are given in the table. During the first four months of her stay at home she was practically at bed rest; the last six months she was up and about from four to six hours daily. She is dyspneic on the slightest exertion. One week ago she went from her home, at sea level, to an altitude of 4,500 feet and was there dyspneic at bed rest and was forced to return home. Her appetite has been excessive and she has gained 15 pounds (6.8 Kg.). She has had no digitalis for two months.

The only changes in the physical observations are that the pallor, dyspnea and cyanosis which were noted before are gone, and that the heart area as determined by percussion has decreased. The left heart border is 10.5 cm. from the midsternal line, the right heart border is 2.5 cm., and the great vessels are 5.5 cm. in diameter. The blood pressure is 204 systolic and 110 diastolic.

The urine is entirely normal and has a specific gravity of 1.025. (This is the first urinalysis made during the past six months which has not shown a one plus albumin.)

The study of this case emphasizes the following principles which should be borne in mind when using phenylhydrazine:

1. Phenylhydrazine is a very potent agent in the destruction of red blood cells and hemoglobin.

2. It has a cumulative action. In this case the destruction of red cells and hemoglobin continued for ten days after medication was stopped.

3. The diagnosis of polycythemia vera should be definitely established before phenylhydrazine medication is started.

4. The drug should be used cautiously in all cases, and only when it is possible to observe its action by frequent blood counts.

5. The medication should be greatly reduced in amount or stopped as soon as the red blood count and hemoglobin approach the normal readings.

A CASE OF CHRONIC BENZENE POISONING

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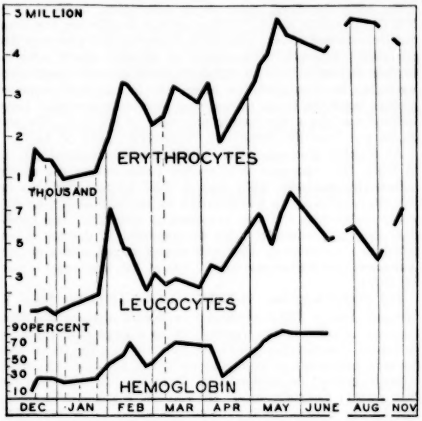
COLUMBUS, OHIO

A white man, aged 22, an American, married and father of two children, appeared at the Ohio State University, State Street Dispensary, Dec. 14, 1926, complaining of weakness and shortness of breath. He was told to report to the University Hospital the next day for study and diagnosis, where he was assigned to the general medical service of Dean J. H. J. Upham and to the immediate care of Dr. George I. Nelson, internist. We are indebted to both of these physicians for permission to abstract such parts of the history of the case as are taken from the hospital records made during the patient's six months' stay in the University Hospital.

When his history was taken he stated that about August 15 he first noticed a sallowness of the skin. About two months later, weakness, palpitation, dizziness and shortness of breath on exertion appeared. Headaches began about November 13, and at times were almost unbearable. His past and family history was negative.

His occupational history was of particular interest and proved to be important. He had worked in rubber factories off and on for about five years. February 12, he began buffing inner tubes for a rubber company in Newark, Ohio. In the same room other workers were washing tube ends in gallon buckets of benzene and cementing them together. He was so placed that fumes from these operations were constantly being sucked over him through the vacuum created by the exhaust of his own buffing machine. The plant closed down, November 15, and he then went to work for another rubber company located in Columbus, where he was not exposed to benzene. After working only seven days, irregularly, he was forced to give up the job because of extreme weakness.

At the time of admission, the young man appeared well nourished, though very pale and anemic. His temperature was 99.4 F. (dropping to 98.6 within from 4 to 5 hours), pulse 144 and respiration 22. Petechiae were scattered quite generally over the body, being more numerous over the legs and thighs. The sclera and conjunctiva of the eyes were very pale



Results of blood examinations. The interrupted perpendicular lines show dates of blood transfusions.

but the eye reactions were normal. Pulsation of the carotids was distinctly visible. The gums were bleeding and petechiae were found on the buccal mucosa. No physical abnormality of the chest or abdomen was found. The heart was apparently normal in size, but a blowing systolic murmur was heard over the entire precordia with maximum intensity in the second left interspace. A rough systolic bruit was heard over the carotids, and a definite "pistol shot" over the femoral arteries and to a less extent over the brachials. The pulse was 96, regular in force and rhythm, but poorly sustained. Blood pressure was 122 systolic and 40 diastolic. Two Wassermann tests were negative, as were blood cultures. The bleeding time was more than twenty-five minutes; the prothrombin test was normal; the coagulation time, four minutes, while fragility was decreased to 0.06 per cent from a normal of 0.40 per cent. The blood platelet count was 100,000 per cubic millimeter, the blood clot was nonretractile after twelve hours, and the tourniquet test was positive. The blood count showed 900,000 erythrocytes, 850 leukocytes and 10 per cent hemoglobin with slight anisocytosis. Urinalysis was negative.

Ophthalmoscopic examination of the right eye disclosed disk margins blurred, especially nasally; considerable retinal edema, and many large and small flamelike hemorrhages in superficial layers of the retina, some of longer standing than others. The veins were tortuous, well filled but light in color; the arteries were very pale. The left eye was similar but also had a large subhyaloid hemorrhage temporally to the disk although not directly in the macular region. The peripheries of both retinas were comparatively clear.

The diagnosis of chronic benzene poisoning was made. During his stay in the hospital, the patient made few complaints except of weakness. He, however, was in a precarious condition and failed to show improvement for some time. Blood analyses were made frequently. In all, twenty-six tests were made. He was put on a high iron diet and given 5 minims

(0.3 cc.) of solution of potassium arsenite three times a day. A transfusion was given with 740 cc. of whole blood, December 18, and again December 25 following a severe epistaxis which was difficult to stop. He did not seem to improve but continued to bleed moderately from the nose and gums; a soft diet was substituted, and Jan. 5, 1927, he was given a transfusion of 1,000 cc. of whole blood. Bone marrow extract, 1 ounce (30 Gm.), was fed beginning January 10, three times a day. This was continued until his discharge from the hospital.

He was again given a transfusion, January 14, of 920 cc.; January 25, he was given 900 cc., after which he showed marked improvement, the blood picture being much nearer normal. He was given no further transfusion until March 5, when with the blood count again descending, he was given 900 cc. of whole blood. Following this transfusion the blood picture returned toward normal and most of the petechiae disappeared. The patient continued to improve slowly with no further serious difficulty. Although blood counts showed some variation, he was given no more transfusions and continued gaining until the blood picture was practically normal. Liver feeding was not a therapeutic procedure in his case. He was discharged from the hospital as "recovered," June 24, 1927.

As benzene poisoning is a compensable occupational disease in Ohio, this man was kept on the compensation list of the industrial commission until Dec. 4, 1927. From the time he left the hospital up to his discharge by the commission he was under observation and was examined at intervals. His condition remained satisfactory, but he continued to develop a few petechiae occasionally. The erythrocytes stayed within normal limits and the leukocytes were 7,000 at the last count (Nov. 23, 1927).

The young man was visited by one of us at his home in Chicago, July 4, 1930, where it was learned that he had been regularly employed since April, 1928, in a large dairy at what he termed "hard labor," with no bad effects. He stated that the only recurrence of symptoms noticed at any time was small hemorrhages of the capillaries of the arms, but these had not been present for some time. He had had a physical examination by the dairy company's physician about December, 1929, and "everything was pronounced O. K.," but no blood examination was made. Two more children had been born to his wife since he left the University Hospital, both living and apparently normal.

We arranged with Dr. Russell M. Wilder, professor of medicine, Chicago University, to have him reexamined at the department of medicine. We are indebted to Dr. Wilder for the following report:

"We found him in excellent health with no physical abnormalities; weight, 70.1 Kg.; temperature, 98.8 F.; pulse, 68; blood pressure, 114 systolic and 60 diastolic; urine, specific gravity 1.020 and 1.022, no albumin, no sugar and no sediment; Wassermann and Kahn tests negative and blood counts as follows:

Red blood cells	4,700,000	4,850,000
Hemoglobin	85%	88%
White blood cells	4,700	4,850
Polymorphonuclears	38	40
Large lymphocytes	10	7
Small lymphocytes	43	47
Mononuclears	8	6
Eosinophils	1	2

"The red cells appeared normal although there was slight anisocytosis.

"We told the patient that in view of his previous benzene poisoning he should return to us annually for examination."

CONCLUSIONS

A patient with a pronounced case of chronic benzene poisoning was apparently saved by repeated blood transfusions (six in number) in 1926 and 1927. A high iron diet and iron as a medicament was also used, but liver feeding was not given as a therapeutic procedure.

Four years after the first appearance of his symptoms, he is apparently normal except that he shows a moderate leukopenia with relative lymphocytosis.

Ohio State University.

Special Article

MISLEADING METHYL CHLORIDE PUBLICITY

REPORT 3 OF THE COMMITTEE ON POISONOUS GASES OF THE AMERICAN MEDICAL ASSOCIATION *

The American Medical Association's Committee on Poisonous Gases takes notice of a trade promotion circular relative to the properties of methyl chloride published by the Roessler and Hasslacher Chemical Company in September, 1930, under the title "Artic." The preface to this circular states: ". . . It is hoped that with this new knowledge, the refrigeration engineer who may be called upon to report on or supervise the use of Artic will have a much better understanding of its properties. . . ." The "properties" as described in connection with possible harm that may be the lot of the workman or householder are couched in misleading terms, based on partial truths, and derived from publications in such a way as not to supply a full measure of the facts presented.

We quote from "Artic," page 11, the following: ". . . In a series of tests conducted by the United States Public Health Service and reported in Bulletin No. 185, it was found that guinea pigs exposed to 2.75% methyl chloride vapors for 10 minutes, 1.67% vapors for 30 minutes, 0.22% for 90 minutes, 0.12% for 150 minutes, and 0.04% for 600 minutes showed, with but few exceptions, no pathological changes, and no deaths occurred either during or after exposure. . . ."

From the original report of the U. S. Public Health Service, number 185, page 9, we quote: ". . . Exposure to 2.75 per cent also caused dizziness of a slight degree in 1 to 5 minutes, unsteadiness in 10 minutes, and a semiconscious condition at the end of 90 minutes. In attempting to walk, the pigs dragged their bodies on the floor of the chamber. Exposures to 2.5 to 2.75 per cent vapors for 10 minutes did not cause death; 30 minutes, 1 death; 90 minutes, death to all animals in six hours after the test; and death occurred to all animals during an exposure of 180 to 205 minutes. Exposure to 1.43 to 1.67 per cent vapors caused uneasiness at the end of 20 minutes and labored breathing, râles and feeble pulse after 265 minutes. No deaths occurred in the animals exposed for 30 minutes, but 90 minutes caused death to all in two to four days. . . ."

We quote from "Artic," page 11: ". . . A. H. Kegel, M.D., in a recent article (Journal of the American Medical Association, Vol. 93, page 353-358) states that methyl chloride is rapidly eliminated as such from the human system simply by getting in the air. . . ."

Now note the exact title of the article, which is omitted in "Artic," and the language of the statement on which the foregoing quotation is presumably based: ". . . From tests on blood and tissues it appears that methyl chloride as such is quickly eliminated after the patient is removed from exposure and the progressive symptoms in the more severe cases are due to continued injury from the oxidation products of the gas until they are eliminated, and to degeneration of

* The committee consists of: H. Gideon Wells, M.D., chairman; Yandell Henderson, Ph.D.; Paul Nicholas Leech, Ph.D.; Carey P. McCord, M.D., and L. R. Thompson, M.D.

V 96
1931

nerve cells. . . ."[1] We take the liberty of quoting an additional paragraph from the report of Kegel and his associates.[1] This does not appear in "Artic": ". . . Since August, 1928, there have been reported in Chicago twenty-nine cases of poisoning by commercial methyl chloride gas, with ten deaths. All of these cases, except three which occurred in a plant where methyl chloride refrigerators are manufactured, developed in kitchenette apartments where leaks were discovered in the refrigerating system. . . ."

As further evidence of the misleading nature of the language of "Artic" we again quote from page 13: "Symptoms." ". . . Excessive exposure to Artic gas brings about a condition similar to alcohol intoxication. Accompanying illness, if any, is characterized by drowsiness, nausea and possibly vomiting. The breath carries a peculiar musty, sweetish odor. These are typical symptoms, according to Dr. A. H. Kegel (Journal of the American Medical Association, Volume 93, p. 353), who also states that they are quite similar to those produced by food poisoning. . . ."

And then we insert here the entire section of the paper cited, carrying the heading "Symptoms" and the subsequent one "Physical Observations."

"SYMPTOMS"

"The onset was generally marked by progressive drowsiness, mental confusion, stupor, weakness, nausea, pain in the abdomen and vomiting. In the more severe types there were convulsions and cyanosis alternating with coma; later delirium and restlessness developed. Most patients showed muscular tremors and hiccup during the acute stage. Although six of the patients complained of severe headache for the first few days, this was not usually recalled until they were convalescent, and several were sure they did not have headaches at any time. On account of their mental disturbance, several were referred to psychiatrists for diagnosis. Eleven complained of amblyopia and vertigo which in many cases persisted after they had otherwise clinically recovered."

"PHYSICAL OBSERVATIONS"

"The pupils were widely dilated and reacted sluggishly to light. Occasionally a slight strabismus, nystagmus or ptosis was noted.

"The pulse, temperature and respiration were all increased. In adults the pulse sometimes went as high as 150 and the respiration to 32. In some of the children the pulse reached 164, and in one child the respiration was 56.

"Anuria, which sometimes lasted as long as forty-eight hours, was usually present.

"About thirty-six hours after exposure to methyl chloride, there generally occurred a rise in temperature, reaching as high as 104 F. in nonfatal cases, and in two instances the temperatures just before death were 107 and 107.4.

"Prolonged coma was of common occurrence, occasionally lasting as long as from thirty-six to seventy-two hours with recovery.

"Death was always preceded by severe convulsions, usually tonic and accompanied by profound cyanosis. During the spasms, marked Opisthotonos was noticed. The immediate cause of death appeared to be respiratory paralysis."

Several other items in similar vein appearing in this trade promotion circular are found, on comparison with the original documents, to bear only a somewhat befogged resemblance to the latter. In fairness to the Roessler and Hasslacher Chemical Company, it is noted that on page 5 there appears this sentence (item 7 of "Advantages" of "Artic" a brand of methyl chloride): ". . . Traces of Artic (0.002% or less, by volume) in air do not produce dangerous conditions. . . ." All other statements concerning toxicity of this substance appear to shift into the concept that methyl chloride is almost a beneficent agent in our atmosphere, and certainly "is far less toxic than gasoline."

Until such time as manufacturers determine the toxicity of their wares and provide reasonable protection against exposure to toxic agents, this committee, so long as empowered, will continue its efforts in protection of the public against these all too frequent hazards. In the literature on "Artic" appears the statement that "Insufficient evidence is available at present to make a positive statement as to the cumulative effect of methyl chloride." This assertion is largely true, but it does not afford an excuse for obtaining this evidence by trying out the effects of methyl chloride on the public. If additional catastrophes from methyl chloride intoxication results, the onus must rest on the producers of that substance.

1. Kegel, A. H.: McNally, W. D., and Pope, A. S.: Methyl Chloride Poisoning from Domestic Refrigerators, J. A. M. A. **93**: 353-358 (Aug. 3) 1929.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS ADOPTED THE FOLLOWING REPORT.

H. A. CARTER, Secretary.

NATIONAL VAPORIZER ACCEPTABLE

The National Vaporizer, manufactured and submitted by the National Drug Company, Philadelphia, is designed for the purpose of vaporizing oil or aqueous solutions and atomizing very fine impalpable powders. There is the entire absence of any metal valves or parts that may oxidize or stick together and so get out of order. The construction also enables almost the entire solution to be vaporized. The construction, however, is relatively fragile and proper care must be taken in the handling of the device to prevent breakage.

The Council declares the National Vaporizer acceptable for inclusion in the list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary.

POLLEN EXTRACTS-CUTTER (See New and Nonofficial Remedies, 1930, p. 31).

The following products have been accepted:

Oak Pollen Extract-Cutter; Western Ragweed Pollen Extract-Cutter; Western Water Hemp Pollen Extract-Cutter.

Prepared by the method given for pollen extracts-Cutter (New and Nonofficial Remedies, 1930, p. 31).

VIOSTEROL IN OIL 250 D (See New and Nonofficial Remedies, 1930, p. 410; and THE JOURNAL A. M. A., Oct. 4, 1930, p. 1021).

Winthrop Viosterol in Oil 250 D.—A brand of viosterol in oil 250 D, N. N. R.

Manufactured by the Winthrop Chemical Co., Inc., New York, under U. S. patent 1,680,818 (Aug. 14, 1928; expires 1945) by license of the Wisconsin Alumni Research Foundation.

Winthrop viosterol in oil 250 D is prepared by dissolving ergosterol in alcohol. The solution is then irradiated by exposure to ultraviolet rays at a determined distance and intensity. After irradiation the alcohol is distilled off in vacuo and the residue is dissolved in sesame oil and adjusted, on the basis of biologic assay, to have the potency of viosterol in oil 250 D, N. N. R.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, JANUARY 24, 1931

NOTABLE ADDITIONS TO THE LITERATURE OF CANCER

The increasing interest in cancer is shown significantly by two recent publications. The *American Journal of Cancer*, a bulky quarterly, the first number of which has been issued, is a continuation of the *Journal of Cancer Research*. The editor is Francis Carter Wood of the Institute of Cancer Research in Columbia University, who will be assisted by a representative editorial board. The journal will be the official organ of the American Association for Cancer Research and of the American Society for the Control of Cancer. By generous financial support from the Chemical Foundation, the journal will be able to cover the entire cancer field—the research, the clinical, the educational and the public health phases of the cancer problem. The aim is to develop a journal in which "all information concerning . . . can be concentrated under a single cover." It will offer "a place for the publication of articles without regard to length or the number of illustrations. The only basis for rejection will be the intellectual quality of the paper submitted," which may be taken to guarantee against avalanches of poorly digested material. It is planned to build a comprehensive and critical abstract department. The first number contains 561 pages, nearly equally divided between original articles and abstracts. The annual subscription is $5 in this country and $5.50 elsewhere. This journal promises to be an important factor in the progress of knowledge of cancer.

The January, 1931, number of the *Annals of Surgery*, 480 pages, contains 54 articles by authoritative writers in many countries on cancer in its general relations, on cancer research, on regional cancer, and on radium and roentgen treatment of cancer. The number, which will be republished as a book entitled "Cancer," is an important contribution of much value to the literature on cancer. The immediate occasion of its publication is to commemorate fittingly the sixty-fourth birthday on Dec. 24, 1930, of a leading pathologist, "who is likewise the foremost American investigator of the entire group of neoplastic diseases" —James Ewing.

During his service of thirty-one years as professor of pathology in Cornell University Medical College, New York, Dr. Ewing has been highly successful as a teacher in the classroom and laboratory as well as of the medical profession in general. By wise, intelligent and critical conservatism and caution he has exercised a wholesome influence on medical literature, on contemporary medical literature, particularly on cancer and allied problems, in a larger degree than perhaps generally recognized. His best known contribution is his great book on "Neoplastic Diseases," which is used and valued the world over. In this book he has assembled the facts about tumors and subjected them to a critical and orderly analysis. The book is a notable landmark in the literature on cancer. The Ewing homage volume (International Contributions to the Study of Cancer in Honor of James Ewing) is a model of its kind with respect both to the deserts of the dedicatee and to the nature of the contributions it contains.

MISLEADING METHYL CHLORIDE PUBLICITY

In June, 1930, the Committee on Poisonous Gases of the American Medical Association issued a report on "Household Mechanical Refrigeration," emphasizing particularly the hazard arising from the use of methyl chloride in such devices. While methyl chloride, when released in the atmosphere, is less poisonous at the moment than either ammonia or sulphur dioxide, its action, unlike that of these substances, may be far more serious over a longer period. Its initial action is that of a narcotic akin to the chloroform type of anesthetic. Its secondary action is probably due to decomposition products in which the primary harmful factor is methyl alcohol or some decomposition substances of methyl alcohol formed in the body, such as formaldehyde or formates.

At the time of its report the committee properly pointed out that it disapproved of the use of warning agents added to such substances as methyl chloride, because warning agents are not a guarantee of protection to infants, locked-in children, the mentally disordered, hospital patients, persons under the influence of alcohol, firemen, and refrigerator workers. THE JOURNAL stated editorially that from the point of view of the committee it is more commendable to work toward the attainment of a nonhazardous refrigerant than toward the attainment of a usable warning agent, when this agent protects only a portion of the public.

Nevertheless, chemical manufacturers have apparently been able to induce the Bureau of Mines to make studies of the properties of methyl chloride and methyl chloride to which had been added acrolein, an irri-

V 96
1931

tating warning agent. One of these concerns, the Roessler & Hasslacher Chemical Company, markets methyl chloride under the trade name of "Artic" and Methyl Chloride A, which is pure "Artic" plus 1 per cent of acrolein.

In May there appeared a report "at the request of the Roessler & Hasslacher Chemical Co." on the possibility of methyl chloride poisoning by ingestion with food and water. The report of the Bureau of Mines was written in such a way that it might lend itself to the production of advertising copy by writers seeking to create favorable propaganda for commercial exploitation of methyl chloride. The report of the Bureau of Mines emphasized that methyl chloride exerts no deleterious effects on the contents of the refrigerator and implies that it is therefore of no importance whether or not methyl chloride escapes into the refrigerator! The major point—the hazard of escaping methyl chloride to occupants near the source of the leak—is not stressed.

Following the reports of the Bureau of Mines, the Roessler & Hasslacher Chemical Company circularized a booklet entitled "Artic." From this booklet one gains the impression that "Artic" is a relatively harmless substance and the last word in efficient and safe refrigerants. In view of both the unwarranted inferences and statements made in this booklet, the Committee on Toxic Gases calls special attention to it in the report that appears in this issue. The Roessler & Hasslacher Chemical Company, which has high grade scientific men in its employ, has ignored reports that indicated definitely the hazards associated with methyl chloride. The favorable physiologic responses are overemphasized in the booklet "Artic," whereas the unfavorable responses are minimized. When the attention of the Roessler & Hasslacher Chemical Company was brought to the uncritical wording in the booklet on "Artic," the reply by their service engineer and co-author of the booklet was that "you doctors are going a little out of your way to take a 'rap' at methyl chloride." The language and the intent of this expression are not eloquent or particularly rhetorical. It is, however, another tribute to the fact that the American Medical Association, through its committees, is willing to make fearless and unbiased reports when the health of the public is subject to jeopardy by undue hazards.

It is unfortunate that a branch of the government, the Bureau of Mines, which has had such an enviable record in the past, has recently seemed to be swayed to serve more the interests of certain chemical manufacturers than to serve the interests of the public. It is laudable that the government should investigate general hazards to the public, but it is quite unfortunate that independent action may be threatened by considerations arising from the fact that research is carried on under "cooperative agreements."

THE HORMONE OF THE ADRENAL CORTEX

The progress made in the more recent study of adrenal functions after many years in which an impasse seemed to have been reached is alike gratifying to the scientific investigator and promising to the puzzled clinician. No one doubted that the adrenal structures play an important and even an indispensable part in life; and the pathologist has helped to fix responsibility for human disaster on disease of these organs. So long as attention was fixed almost exclusively on the medulla of the adrenal, because of its relationship to the well defined potent hormone epinephrine, the remaining functions of the cortex were left obscure. When once the cortical parts of the gland were given more intensive consideration, their essential rôle was promptly discovered. The biochemists thereupon demonstrated that the cortex, too, could be made to yield a uniquely potent component—a hormone truly essential to life and capable of passing the test of replacement therapy in cases of loss of the adrenals.

Success seems to have come almost simultaneously and quite independently to two groups of American investigators. The experiments of Swingle and Pfiffner of Princeton University have already been referred to in THE JOURNAL, as have those of Hartman and his collaborators at the University of Buffalo.[1] The effectiveness of the Swingle-Pfiffner "extract" in a series of human cases of Addison's disease is demonstrated in the leading article in this issue. Hartman, Brownell and Hartman[2] also have been able to prepare a concentrated extract that will prolong the lives of adrenalectomized animals indefinitely. The Buffalo physiologists also have revived a patient with Addison's disease having a systolic blood pressure of 50 mm. and a pulse of 120 a minute, together with other characteristic symptoms, by the use of their preparation of the hormone, for which they propose the name cortin. Hartman, Brownell and Hartman point out that the results of the injection begin to be evident in the course of a few hours. Its action is not as prompt as that of some hormones. The quickness of the response seems to depend partly on the acuteness of the insufficiency. If the insufficiency has developed slowly, it seems to require longer to produce a reaction with cortin. When the insufficiency is acute, a response may be noted inside of an hour or so. Cortin administered by mouth appears to give little or no benefit. It is best given subcutaneously except in circulatory failure in which absorption is greatly reduced; then intravenous injection should be employed.

One may confidently expect that to the successful clinical use of insulin and liver extract under conditions

1. The Hormone of the Suprarenal Cortex, editorial, J. A. M. A. **91**: 1376 (Nov. 3) 1928; The Indispensable Suprarenal Cortex, ibid. **94**: 1242 (April 19) 1930; Suprarenal Function, ibid. **95**: 1506 (Nov. 15) 1930.

2. Hartman, F. A.; Brownell, Katharine A., and Hartman, W. E.: A Further Study of the Hormone of the Adrenal Cortex, Am. J. Physiol. **95**: 670 (Dec.) 1930.

in which, without them, death would be impending may soon be added the relief of the dire Addison's disease by the cortical hormone. Each of these beneficent discoveries would have been impossible without experiments on animals, which furnished the decisive proofs required. Who would have ventured to employ extracts of pancreas or of adrenal cortex on man without the safeguards that animal tests have furnished? While rejoicing in the prospect of human lives saved and spared from suffering, let us recall again and again what the freedom of research with the help of animal experimentation means to man's great benefactor, the investigator.

THE MEDICAL MEMORIAL IN PERSHING HALL

More than one thousand dollars has been contributed by physicians to the fund being raised by the American Medical Association for the memorial salon to physicians who served and died in the war. This room will be included in Pershing Hall, a building in Paris in which memories of America's participation in the war will be permanently preserved in sculpture, painting and historical relics. The American medical contribution must be $10,000. The building itself is completed. It will house, in addition to the special memorial halls from many organizations, a great historical library, an auditorium, and classrooms in which American children in Paris may study English, civics and American history; finally, there will be an information bureau for Americans visiting Paris.

As is pointed out in the advertisement elsewhere in this issue, almost 40,000 American physicians were regularly enrolled in government services in the war and every physician in the United States contributed of his time and of his knowledge to help America in the great conflict. It is fitting that the American profession should be represented in this permanent memorial. It is the hope of the Board of Trustees of the American Medical Association that the vast majority of the membership will contribute to the establishment and the maintenance of the medical salon. The names of all contributors are being published in THE JOURNAL and in the *American Medical Association Bulletin*, and the book containing the names of the contributors will be one of the conspicuous items in the hall in Paris.

In the advertisement that appears on advertising page 25 in this week's issue of THE JOURNAL, a coupon is attached for use in sending individual contributions. Certainly it should not be difficult to secure the $10,000 necessary in the very near future. The Board of Trustees will make suitable announcement as soon as the sum is realized and will report to the House of Delegates at the annual session of the Association in June the expenditure of the money. If the reader has not already subscribed to this fund, he should do so immediately. The individual contribution need not be great. It should represent what the contributor feels is an adequate sum for him in this campaign to memorialize permanently the contribution of the medical profession to the Great War.

Current Comment

ATTEMPTED REVIVAL OF THE SHEPPARD-TOWNER ACT

The Jones-Cooper bill [1] to revive and perpetuate federal control over state activities in the field of maternal and infant hygiene, under the direction of the Children's Bureau, was passed by the Senate, January 10. The bill is now in the House of Representatives, where it has been referred to the Committee on Interstate and Foreign Commerce. The committee gave a hearing, January 20, on this bill and a bill of similar purport, H. R. 12995, providing that the federal government shall cooperate with the states in promoting the general health of the rural population of the United States and the welfare and hygiene of mothers and children. The House of Delegates, at its meeting in Detroit, 1930, condemned all legislation of this character. Protests should therefore be promptly filed with Representatives, urging that neither of the bills named nor any similar legislation be enacted. Stripped of their preambles, the resolutions adopted by the House of Delegates were as follows:

Resolved, That the House of Delegates of the American Medical Association condemns as unsound in policy, wasteful and extravagant, unproductive of results and tending to promote communism, the federal subsidy system established by the Sheppard-Towner Maternity and Infancy Act and protests against the revival of that system in any form;

Resolved, That it is the sense of the House of Delegates that each state should be left free to formulate its own health programs, with the cooperation of the United States Public Health Service if desired by the state, free from any inducement or compulsion in the way of federal reward or coercion;

Resolved, That any legislation involving cooperation between the federal government and the several states in the field of public health must, in the interest of efficiency and economy, in the judgment of the House of Delegates, be administered under the joint supervision and control of the United States Public Health Service and the state health authorities.

THE WICKERSHAM REPORT

After more than eighteen months of careful consideration of many questions having to do with the enforcement of prohibition, the Wickersham Commission on January 20 presented to the President of the United States its report on this subject. Although disagreeing radically on many other phases of the subject, the commission was unanimous in its decisions concerning the relationship of the medical profession to the prescribing of alcohol and of alcoholic liquors for the treatment of disease. Indeed, it recommended unanimously the removal of the causes of irritation and resentment on the part of the medical profession resulting from the enforcement of the Volstead Law in its interpretation of the Eighteenth Amendment. The commission listed three main objects to be

1. S. 255 and H. R. 1195.

V 96
1931

achieved so far as the medical profession is concerned in this legislation: (*a*) Doing away with the statutory fixing of the amount which may be prescribed and the number of prescriptions; (*b*) abolition of the requirements specifying the ailment for which liquor is prescribed on the blank which goes into the public files, and (*c*) leaving as much as possible to regulations rather than fixing details by statute. These are the principles for which the medical profession has fought ever since prohibition became the law of the nation. They represent a recognition by the commission of the fact that the practice of medicine is the duty of the medical profession and not the privilege of Congress. They recognize the age-old principle that it is within the province of the physician licensed to practice by the state to prescribe for his patient anything which he feels is for the good of the patient and in such quantities as he feels are necessary in order to secure certain effects. The Wickersham Commission will have the gratitude of the medical profession for its logical consideration of these subjects.

THE DISTRIBUTION OF ERGOSTEROL IN THE BODY

Through the combined efforts of the chemist, physicist, biologist and clinician a mass of data, exceedingly fine in detail and surprisingly broad in extent, has accumulated regarding ergosterol. Thus it has been shown that this highly unsaturated sterol can be transformed into a calcifying agent of extraordinary potency by relatively brief exposure to ultraviolet radiation; that spectroscopic changes in ergosterol accompany this biochemical activation; that the rise in blood calcium content following administration of irradiated ergosterol —viosterol—depends to some extent on the normal function of the parathyroid glands; that this calcifying property is in many if not in most cases an effective antirachitic influence; and that the rapid and intense mobilization of calcium produced by extremely small quantities of this substance constitutes a limitation to its adaptability to uncontrolled use as a therapeutic agent. While many sources of ergosterol are known, the fate of this substance in the organism, especially in cases in which it is given regularly in prophylaxis against rickets, has not been determined. Studies bearing on this point have recently been reported by Page,[1] who determined the distribution of ergosterol in the bodies of rabbits that had received very large doses of viosterol over periods varying from 36 to 164 days. At necropsy the animals showed uniformly the pathologic evidence of overdosage with viosterol. It was found under these conditions that ergosterol could be demonstrated only in the brain, adrenals and liver with occasional traces in the kidneys. The other organs examined showed none. It is striking that the tissues in which the ergosterol was demonstrated normally contains notable amounts of the closely related compound, cholesterol. Furthermore, the bones that ordinarily benefit from the administration of viosterol do not store this substance, even after such long-continued overdosage as practiced in these experiments.

1. Page, I. H.: Biochem. Ztschr. **220**: 420 (April 17) 1930.

Association News

THE PHILADELPHIA SESSION

Philadelphia Hotels

Below may be found a list of Philadelphia hotels and rates for rooms. On advertising page 37 of this issue of THE JOURNAL may be found this list together with an application form that can be used to secure reservations through the Subcommittee on Hotels of the Local Committee on Arrangements.

Hotels at Philadelphia

Name and Address	Single		Double		
	Without Bath	With Bath	Without Bath	With Bath	Suites
ADELPHIA ..... 13th and Chestnut Sts.	.....	$4.00-6.00	.....	$6.00-10.00	$12-20
BARTRAM ..... 33d and Chestnut Sts.	$2.00-2.50	3.00	$3.00-3.50	4.00- 5.00	6.00
BELGRAVIA ..... 1811 Chestnut St.	.....	4.00	.....	6.00- 7.00	8.00 and up
BELLERICH ..... 15th and Spruce Sts.	.....	3.00-5.00	.....	4.00- 6.00	7-8
BELLEVUE STRATFORD.. Broad and Walnut Sts.	4.00-6.00	5.00-9.00	6.00-8.00	7.00-13.00	20-30
BENJAMIN FRANKLIN... 9th and Chestnut Sts.	.....	4.00-6.00	.....	6.00-10.00	12-30
CHATHAM ..... 20th and Walnut Sts.	.....	5.00	.....	7.00	8-12
COLONIAL ..... 11th and Spruce Sts.	1.50-2.50	3.00-4.00	2.00-2.50	4.00- 5.00	6-7
DRAKE ..... 1512 Spruce St.	.....	4.00-6.00	.....	7.00-10.00	12-15
ELKS ..... Broad at Vine St.	.....	2.50-3.50	.....	5.00- 7.00	10-15
EMBASSY ..... 1603 W. Girard Ave.	2.00-3.00	3.50	3.00-4.00	5.00	.....
FAIRFAX ..... 43d and Locust Sts.	.....	3.00-4.00	.....	5.00- 6.00	7-10
GLADSTONE ..... 11th and Pine Sts.	.....	4.00	.....	7.00	12-20
GREEN'S ..... 8th and Chestnut Sts.	2.00-2.50	3.00-3.50	3.50-4.00	4.50- 5.50	.....
GREEN HILL FARMS.... City Line and Lancaster Pike	.....	7.00-8.00	.....	9.00-11.00	14-16
LAFAYETTE ..... 1339 Arch St.	2.00-2.50	3.00-3.50	3.00-4.00	5.00- 6.00	8-10
LORRAINE ..... Broad and Fairmount Ave.	2.50	3.00	3.50	5.00	10.00
MAJESTIC ..... Broad and Girard Ave.	2.00	3.00	3.50	5.00- 6.00	8-12
MARLYN ..... 40th and Walnut Sts.	.....	2.50-3.50	.....	4.00- 6.00	8-12
MAYFAIR ..... Lincoln Drive and Johnson St.	.....	3.00 and up	.....	5.00 and up	5.00 and up
MCALPIN ..... 111 S. Tenth St.	2.00	2.50-3.50	3.50	4.00- 5.00	7.00 and up
PENNSYLVANIA ..... 39th and Chestnut Sts.	.....	3.00-5.00	.....	5.00-10.00	12.00 and up
RITTENHOUSE ..... 22d and Chestnut Sts.	2.00-3.00	2.50-3.50	3.00-4.00	4.00- 6.00	8-10
RITZ-CARLTON ..... Broad and Walnut Sts.	.....	6.00-8.00	.....	10.00-12.00	20.00 and up
ROBERT MORRIS..... 17th and Arch Sts.	.....	3.00-4.00	.....	5.00- 6.00	.....
ST. JAMES..... 13th and Walnut Sts.	.....	3.00-4.00	4.00-5.00	5.00- 7.00	8-10
SPRUCE ..... 13th and Spruce Sts.	2.50	3.00	4.00	5.00	.....
STEPHEN GIRARD..... 2027 Chestnut St.	2.50	3.00	.....	4.00- 6.00	.....
SYLVANIA ..... Juniper and Locust Sts.	.....	3.50-5.00	.....	6.00- 8.00	12-15
TRACY ..... 36th above Chestnut St.	2.00	3.00	.....	5.00	4-6
VENDIG ..... 13th and Filbert Sts.	.....	3.00-4.00	.....	5.00- 7.00	.....
WALTON ..... Broad and Locust Sts.	2.50-3.00	3.50-5.00	4.00-5.00	6.00- 8.00	12-15
WARBURTON HOUSE.... (Women) 20th and Sansom Sts.	2.50	3.00-4.00	4.00	5.00	6.00
WARWICK ..... 17th and Locust Sts.	.....	5.00 and up	.....	8.00 and up	15.00 and up
WELLINGTON ..... 19th and Walnut Sts.	.....	5.00	.....	6.00	10.00 and up
WINDSOR ..... 1219 Filbert St.	2.00	2.50-3.00	3.00-4.00	4.50- 5.00	7.00
Y. M. C. A..... 1421 Arch St.	1.50-2.00	.....	3.00-4.00	.....	.....

There should be no difficulty encountered in securing satisfactory accommodations if those who expect to attend the annual session of the American Medical Association, June 8 to 12, will

send in their applications at the earliest possible time. The form that is printed in the advertising pages may be clipped and, when properly filled in, should be sent at once to Dr. Frederick S. Baldi, Chairman of the Subcommittee on Hotels, 304 Chamber of Commerce Building, 1129 Walnut Street, Philadelphia. Applicants for reservations are especially requested to include a second and a third choice in order that good accommodations may be assured if the desired reservation cannot be had at the hotel of preference.

Announcement of Exhibit Under the Auspices of the Section on Dermatology and Syphilology

For the Philadelphia Session, the Section on Dermatology and Syphilology has appointed the following members of the Committee on Section Exhibit: C. W. Finnerud, M.D., Chicago; Robert L. Gilman, M.D., Philadelphia; Hamilton Montgomery, M.D., Rochester, Minn., and F. D. Weidman, M.D., chairman, Philadelphia.

This year the Committee on Section Exhibit has planned to take up the subject of the "Relation of Dermatology to Systemic Conditions." Since this topic is too comprehensive to be covered exhaustively in one year, it will be spread over two or three years. For 1931 the committee has chosen conditions of the order of erythema multiforme. Subjects that might be included in the section exhibit this year are urticaria, erythema multiforme, erythema induratum, erythema nodosum, toxic erythema, eczema, angioneurotic edema, lupus erythematosus, Haverhill disease and drug eruptions. While the material is abundant in the specialty, the committee will welcome photographs and other materials from as large a representation as possible in order to make the exhibit cosmopolitan, as it should be. It is also the endeavor of the committee to make the exhibit of interest and value to the medical profession at large as well as to the specialty.

The members of the specialty are requested to take inventory of materials that might be exhibited and communicate with Dr. Weidman. A circular letter giving information concerning this exhibit, together with the usual application blank, has been mailed to all those who have registered in the section during the last five years. Those who have not registered in this section but who are interested in such an exhibit may obtain a circular letter and application blank by sending a request to Dr. Fred D. Weidman, Thirty-Sixth Street and Hamilton Walk, Philadelphia, or to Director, Scientific Exhibit, 535 North Dearborn Street, Chicago.

All applications must be filed with Dr. Weidman not later than February 15.

CONTRIBUTIONS FOR MEDICAL SALON IN PERSHING MEMORIAL

The sum contributed for the Pershing memorial in Paris brings the total for this week to $1,133. The list of those who contributed during the current week follows:

Hugh Beaton, M.D., Fort Worth, Texas
A. W. Bingham, M.D., East Orange, N. J.
Joseph H. Lucinian, M.D., Miami, Fla.
Gen. J. R. Kean, M. C., U. S. Army, Washington, D. C.
C. B. Stuart, M.D., Springfield, Ill.
Karl G. Zwick, M.D., Cincinnati
Lewis H. Seaton, M.D., Chambersburg, Pa.
Philip S. Rosenblum, M.D., Philadelphia
Emory E. Lovas, M.D., Berwind, W. Va.
Frederick C. Bendixen, M.D., Ireton, Iowa
Beulah Cushman, M.D., Chicago
Edward B. Krumbhaar, M.D., Chestnut Hill, Pa.
Charles Maertz, M.D., Cincinnti
Octave J. Goffin, M.D., Portland, Ore.
J. McGrath, M.D., Elkader, Iowa
Genesee County Medical Society, Flint, Mich.
C. Baton, M.D., Covington, Ky.
H. Sheridan Baketel, M.D., Jersey City
R. E. Tholberg, M.D., Southington, Conn.
F. A. Dodge, M.D., LeSueur, Minn.
Richard R. Elmore, M.D., Louisville, Ky.
W. H. Marsh, M.D., Solomons, Md.
H. B. Aitkins, M.D., Le Sueur Center, Minn.
J. W. Daniels, M.D., St. Peter, Minn.
Theodore Holtan, M.D., Waterville, Minn.
Louisa Kirschbaumer, M.D., St. Peter, Minn.
Joseph O. McKeon, M.D., Montgomery, Minn.
F. P. Strathern, M.D., St. Peter, Minn.
Edgar S. Krug, M.C., McConnellsburg, Pa.
F. E. Scheppler, M.D., Somonauk, Ill.
Calhoun County Medical Society, Battle Creek, Mich.

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts at 10 a. m. on Monday, 9:45 on Tuesday, 10:45 on Thursday, and 10 o'clock on Saturday, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week is as follows:

January 26. The Value of Periodic Health Examinations.
January 27. Facts About Quacks.
January 28. The Importance of Rural Public Health Work.
January 31. How to Gain Weight.

Five minute health talks may be heard over the Columbia Broadcasting System daily except Sundays and holidays from 12 to 12:05 p. m.

The program for the week is as follows:

January 26. Health Aspects of Heart Disease.
January 27. What Growing Children Need.
January 28. All Because of Spike Heels.
January 29. Safety Last.
January 30. A Columnist Comments on Health.
January 31. Are You in Business for Your Health?

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Society News.—The San Francisco County Medical Society was addressed, January 13, by Drs. Frederick L. Reichert on "The Dawn of Gastric Surgery, the Semicentennial of Billroth's First Pylorectomy"; Henry Harris, "Henry Gibbons, M.D., Physician, Savant and Moralist," and William Dock, "Tercentenary of the Introduction of Cinchona."——The San Francisco Pathological Society was addressed, January 14, by Drs. Otto H. Pflueger on "Carotid Body Tumor" and Raymond J. Millzner, "Diagnosis of Malignancy by Study of Ascitic and Pleural Fluids"; Dr. William Ophuls also addressed the meeting.——The Alameda County Medical Society was addressed, January 19, by Drs. Nathaniel A. Cary, Oakland, on "Angioma of the Spine"; Frank S. Baxter, Oakland, "Streptothrix Throat Infections," and Karl Meyer, Ph.D., San Francisco, "Prevention of Milk-Borne Diseases."

Shop at University for Orthopedic Appliances.—Dr. Langley Porter, dean of the University of California Medical School, recently announced that a shop will be opened this month which will assemble and fit braces, splints and other mechanical appliances for the relief of temporary or permanent injury, in accordance with a plan to extend the service of the University of California Hospital Out-Patient Department, a Community Chest agency, to citizens of the state crippled through accident or congenital deformities who have not money to pay regular medical fees. The purpose of the shop will be to make fittings of appliances of all kinds at the clinic under a physician's supervision. According to Dr. George C. Hensel, who will be in charge of the plant in connection with his work as head of the orthopedic division of the outpatient department, the majority of patients requiring such assistance are children. A cost charge will be made only for the patients of the clinic.

Another Package Library Established.—The University of California Medical School Library, San Francisco, has inaugurated a "packet library service," it is reported, to serve properly qualified physicians and medical institutions of the state. The medical school library, which is supported entirely by state funds, contains at present more than 35,000 bound volumes, 20,000 reprints, and 25,000 theses and miscellaneous pamphlets. It receives more than 400 current medical and dental periodicals from all leading countries of the world; its periodical files include more than 700 sets of journals, of which 365 are complete. The facilities of the University of California Life Sciences Library in Berkeley, totaling about 50,000 volumes, and the resources of the General University of California Library, Berkeley, comprising more than 600,000 volumes, are also available through the package library service. Books and periodicals may be secured on application by any qualified phy-

V 96
1931

sician or medical institution in the state for a ten day period, subject to the payment of carrying charges only. Limited facilities are available for reference service, which, it is hoped, will be extended soon.

COLORADO

Society News.—Dr. Harvey S. Rusk addressed a recent meeting of the Pueblo County Medical Society at Pueblo on "Foreign Bodies of the Upper Respiratory Tract."——Dr. Michel Weinberg of the Pasteur Institute, Paris, addressed the Medical Society of the City and County of Denver, Dec. 16, 1930, on serotherapy and anaerobic infections.——Mr. Harvey T. Sethman addressed the Las Animas County Medical Society, Dec. 5, 1930, at Trinidad on "Medical Defense and Liability Insurance." Mr. Sethman addressed the Mesa County Medical Society, Dec. 16, 1930, at Grand Junction on "Importance of the County Society in Medical Organization Work"; Dr. George P. Lingenfelter, Denver, conducted a dermatologic clinic and Dr. George H. Curfman, Salida, spoke on "Intestinal Obstruction."——Dr. Clough T. Burnett, Denver, among others, addressed the Northeast Colorado Medical Society, Dec. 11, 1930, in Sterling, on "Medical Management."

FLORIDA

Whitehurst Sentenced.—The State Board of Medical Examiners of Florida reports that Tyree C. Whitehurst, Tampa, was convicted in the criminal court of Hillsborough County for practicing medicine without a state license and sentenced to serve a year and a day in the state prison at Raiford. Whitehurst claimed that he graduated at the University College of Medicine, Richmond, in 1898, and was licensed in Florida in 1915. Examination of the alumni list of the Medical College of Virginia for the years 1895 to 1903 and the University College of Medicine for the years 1894 to 1908 showed that he was not a graduate, and there is said to be no record of a Florida license ever having been issued to him. Whitehurst was acquitted of a charge of altering a public record in the office of the clerk of the circuit court. He was charged with having erased the name of Dr. Sam Wilson, who died in 1927, and inserting his name instead.

ILLINOIS

Society News.—Drs. Charles H. Eyermann and French K. Hansel, St. Louis, addressed the Peoria City Medical Society, January 20, on "What Every Physician Should Know About Allergy" and "What Every Rhinologist Should Know About Allergy," respectively.——Dr. John A. Wolfer, Chicago, addressed the Warren County Medical Society, January 8, on "Diagnosis and Treatment of Carcinoma of the Rectum and Sigmoid," and Dr. William H. Holmes, Chicago, "Modern Conceptions of Nephritis."

Chicago

Society News.—The Chicago Roentgen Society was addressed, January 14, by Drs. Max M. Peet, Ann Arbor, Mich., on "Ventriculography"; Eugene P. Pendergrass, Philadelphia, "Encephalography, Its Indications and Contraindications," and Percival Bailey, "Use of Air Injections in Nervous Diseases."——Dr. John Gordon Wilson, among others, addressed the Chicago Neurological Society, January 15, on "Laryngeal Vertigo and Its Relation to Cataplexy."——The Chicago Society of Allergy was addressed, January 19, among others, by Dr. Isadore Pilot on "Hypersensitiveness in Arthritis Due to Hemolytic Streptococci."——At the Chicago Laryngological and Otological Society meeting, January 5, G. O. Russell, director of the phonetics laboratory, Ohio State University, Columbus, gave a motion picture demonstration of "Normal Interior Laryngeal Functions which Block the View of the Glottal Lips," and Dr. G. Henry Mundt, Chicago, discussed the audiometer.——Dr. Maurice A. Bernstein addressed the Chicago Orthopedic Club, January 9, on "Synovectomy of the Knee Joint."——Speakers at the meeting, January 12, of the Chicago Pathological Society were William H. Taliaferro, Ph.D., Dr. Paul R. Cannon and Sarah Goodloe, on "Relation of Splenectomy to the Resistance of Rats to Trypanosoma Lewisi"; A. P. Locke, Ph.D., and Edna R. Main, "Copper and Iron Content of the Blood in Cancer and in Pregnancy"; Franklin S. Dubois, "Chronic Bronchitis with Foreign Body (Elastic Fibers) Reaction of the Lungs"; Dr. Ruth Tunnicliff, "Colonies of Hemolytic Streptococci on Chocolate Agar." Dr. Edward H. Hatton presented a case report of an unusual odontoma.——The Chicago Gynecological Society was addressed, January 16, by Dr. William M. Thompson on "Endometriosis of the Umbilicus"; Dr. Andrew C. Ivy, Carl Hartman, Ph.D., and Dr. Arthur Koff, "Contraction of Monkey Uterus sub Partu"; Dr. Frederick H. Falls, "Observations of the Use of Lugol's Solution in Hyperemesis Gravidarum," and Dr. Robert M. Grier, "Fetal Mortality."——Drs. Joseph S. Eisenstaedt, Robert H. Herbst and Harry B. Culver participated in a symposium on urinary calculi before the Chicago Urological Society, January 22.

LOUISIANA

New Hutchinson Memorial Dedicated.—The new Hutchinson Memorial Building of Tulane University of Louisiana School of Medicine was formally dedicated, Dec. 10, 1930. The nine-story building, which was made possible by a gift of $1,250,000 from the General Education Board of the Rockefeller Foundation, will be devoted to the care of the ambulatory sick and the injured admitted on appointment, and to instruction of medical students in a manner which is said to be without precedent. Each student will be given his own office, in which the working arrangements will resemble closely those of private practice. He will examine and treat patients under the supervision of an instructor. There are 105 such offices, each of which is equipped with a small dressing room, an examining table, a desk, a laboratory table with equipment, a centrifuge and a wash-stand. The Louisiana State Medical Society and the Orleans Parish Medical Society will have quarters in the building. Administration offices and teaching facilities for the graduate school of medicine and third and fourth year student classes are provided. The work of the first and second years will be continued in the Richardson Memorial Building and in the science building.

MAINE

Society News.—At a meeting of the Kennebec County Medical Association, Waterville, Nov. 19, 1930, papers were read by Drs. Walter W. Hendee, North Vassalboro, on diet in disease; Forrest H. Badger, Winthrop, theories, facts and fallacies concerning pneumonia; and Louis F. Fallon, Augusta, choice of anesthetic.——Dr. Henry A. Christian, Boston, addressed the Penobscot County Medical Society in December, 1930, on etiology and treatment of edema.

MASSACHUSETTS

Personal.—A fund of $25,000, made up of gifts from physicians and social workers, was recently presented to the Massachusetts General Hospital, Boston, to be known as the Dr. Richard C. Cabot Educational Fund. The income from the fund is to be used to finance an educational program in hospital social service.——Drs. George R. Minot and William P. Murphy, professor and instructor, respectively, in medicine at the Harvard University Medical School, were awarded the 1930 Cameron prize of the Faculty of Medicine of the University of Edinburgh, in recognition of their work on the treatment of pernicious anemia.——Arthur D. Little, D.Sc., Cambridge, a former president of the American Chemical Society, received, January 9, the Perkin Medal, awarded annually to the American chemist who has most distinguished himself by his services to applied chemistry. Dr. Little responded with an address on "The Evaluation of Chemical Projects."——Dr. Walter B. Cannon, George Higginson professor of physiology, Harvard University Medical School, received the degree of doctor honoris causa from the University of Liége, Belgium, Nov. 15, 1930, and the same degree from the University of Strasbourg, Germany, Nov. 22, 1930. He recently became a foreign honorary fellow of the Royal Society of Edinburgh.——Dr. Charles E. Congdon, formerly of Nashua, N. H., has retired from practice, it is reported, and moved to Nantucket; he has resigned from the state medical society.

Society News.—The New England Roentgen Ray Society was addressed, Dec. 19, 1930, among others, by Dr. George H. Bigelow, Boston, on "The State's Cancer Campaign."——The Essex South District Medical Society was addressed, Dec. 3, 1930, among others, by Drs. Edward L. Peirson, Jr., on "Tubal Insufflation," and Aubrey C. Bishop, Salem, "Pneumococcic Meningitis with Pituitary Tumor."——Dr. Howard F. Root, Boston, discussed the preoperative and postoperative medical treatment of diabetes with diet and insulin, insulin resistance and the complications of diabetes before the Norfolk District Medical Society, Nov. 25, 1930.——Dr. Henry D. Chadwick, Detroit, addressed the New England Roentgen Ray Society, January 16, on "Evolution of Pulmonary Tuberculosis in Children as Revealed in the Roentgenogram."——Dr. Henry A. Christian addressed the Harvard Medical Society, Boston, January 13, on "Clinical Classification of Nephritis."——Dr. Edward

W. Archibald, McGill University Faculty of Medicine, Montreal, addressed the Berkshire District Medical Society, Pittsfield, January 2, on surgical treatment of tuberculosis.——Dr. George Gilbert Smith addressed the Middlesex East District Medical Society, Boston, January 21, on etiology, prevention and treatment of prostatic diseases.——A symposium on duodenal ulcer comprised the program of the Essex South District Medical Society, Beverly, January 7; speakers were Drs. Franklin White, on the medical aspect; Arial W. George, x-ray aspect, and P. P. Johnson, surgical aspect.

MICHIGAN

Society News.—Dr. Charles L. Brown, Ann Arbor, addressed the Oakland County Medical Society, Pontiac, January 16, on "Clinical Use of Diuretics."——Nathan Sinai, D.P.H., of the Committee on the Costs of Medical Care, Washington, D. C., spoke on "The Problem of Medical Economics," before the Washtenaw County Medical Society, January 15. Dr. Ray C. Stone, Battle Creek, president, Michigan State Medical Society, discussed activities of the state society.

Dr. Peterson Becomes Professor Emeritus.—Dr. Reuben Peterson, who resigned recently after thirty years as professor of obstetrics and gynecology at the University of Michigan Medical School, Ann Arbor, was named by the board of regents to the honorary position of professor emeritus of gynecology and obstetrics. Dr. Peterson was graduated in medicine from Harvard University Medical School, Boston, in 1889 and began the practice of medicine in Grand Rapids in 1890. He remained there until called to Chicago as professor of gynecology at the Post-Graduate Medical School and assistant professor of obstetrics and gynecology at Rush Medical College. In 1901 he became head of the department at Michigan, the fourth man to occupy that position since the founding of the university in 1851. A portrait of Dr. Peterson, painted by John C. Johansen, was presented to the university, January 14, by a group of Dr. Peterson's former assistants.

MISSOURI

Personal.—Dr. William W. Buckingham, an instructor in surgery at the University of Michigan Medical School, Ann Arbor, has been appointed superintendent of the Kansas City (Mo.) Tuberculosis Sanatorium, it is reported.——Dr. Mazyck P. Ravenel, Columbia, professor of preventive medicine and bacteriology at the University of Missouri, was appointed consultant in public health and medical education to the Missouri State Board of Health, Dec. 2, 1930.

Dr. Seelig to Engage in Research.—Dr. Major G. Seelig, St. Louis, who retired from active practice last June, assumed the directorship, January 1, of a program of cancer research to be initiated at Barnard Free Skin and Cancer Hospital, it is reported. Dr. Seelig was formerly professor of surgery at St. Louis University and, since 1920, has been professor of clinical surgery at Washington University School of Medicine; he also held the position of director of surgery at Jewish Hospital.

Society News.—The Kansas City Southwest Clinical Society was addressed, January 13, by Drs. Donald R. Black on "Jaundice"; Ernest F. Robinson, "When Should the Gallbladder Be Removed?"; Lindsay S. Milne, "Extra-Abdominal Conditions Simulating Intra-Abdominal Lesions"; Ernest G. Mark, "Use and Value of Uroselectan," and William T. Coughlin, "Diagnosis and Treatment of the Acute Abdomen." Dr. Coughlin addressed the Jackson County Medical Society in the evening on "My Personal Experience with Sympathectomy in Arthritis."——Dr. Lasley E. Huber, Moberly, addressed the Randolph-Monroe County Medical Society, Nov. 11, 1930, on "Headache, Its Clinical Importance in Manifestation of Disease."

NEW YORK

Society News.—The third case of tularemia to be reported in New York State was recently recorded.——Dr. Winfield W. Scott, Rochester, addressed the Tompkins County Medical Society, Ithaca, Nov. 18, 1930, on "Significance of Blood in Urine with Particular Relation to Bladder Tumors."

Survey of Morbidity from Heart Disease Planned.—A cooperative study by about 1,000 upstate physicians of the morbidity from diseases of the heart is to commence this month under the auspices of the division of vital statistics of the state department of health. Since official health agencies do not require the reporting of heart disease, information can be gathered only with the voluntary assistance of practicing physicians. Heart disease has been the leading cause of death in New York since 1912 with the exception of 1918, when pneumonia held first place followed by influenza, heart disease being third. In 1929 the death rate from diseases of the heart, 310.2 per hundred thousand of population, was the highest ever recorded, practically one out of four deaths being ascribed to this group of causes. In the same year 4,104 persons under 45 years of age died from heart disease; 4,472 in the age group 45-54 years, and 7,697, 55-64 years. Heart disease was second in importance in the age group 10-19 years, preceded only by tuberculosis, and third between the ages 20-40 years, tuberculosis being first and pneumonia second; after the fortieth year, heart disease held first place.

New York City

To Honor Dr. Ewing.—A testimonial dinner in honor of Dr. James Ewing, professor of pathology, Cornell University Medical College, will be given by the medical board of Memorial Hospital, January 31, at the Plaza Hotel.

Hospital News.—The new twelve-story addition to the New York Polyclinic Medical School and Hospital was formally opened, Dec. 29, 1930, following dedicatory ceremonies; it was constructed during the past year at a cost of more than $1,500,000 and will increase the capacity of the hospital to about 450 patients a day and at the same time permit clinical service to move more than 600 outpatients.

Physicians' Art Exhibit.—The fifth annual exhibition of the New York Physicians Art Club will be held at the New York Academy of Medicine, February 14-March 14. All members of the medical profession who wish to show original work in the plastic or graphic arts are invited to participate. Membership in the New York Physicians Art Club is not necessary. Details may be obtained from Dr. Louis C. Schroeder, secretary, 50 East Seventy-Second Street, New York.

Dr. Marine Honored.—Dr. David Marine, assistant professor of pathology at Columbia University College of Physicians and Surgeons since 1920, and director of laboratories of Montefiore Hospital, was presented with the gold medal of the New York Academy of Medicine, January 7. Dr. Marine was unable to attend the ceremony on account of illness. The presentation was made, it is reported, for his research into the structure, functions and diseases of the thyroid gland.

Personal.—Drs. David H. Kling and Louis Nathan have been awarded fellowships of $2,400 each for 1931 by the committee of the Brown Orthopedic Research Fellowship of the Hospital for Joint Diseases; Dr. Kling won a scholarship last year. He will continue his researches on the fluids of joints; Dr. Nathan's research will deal with osteomyelitis and infantile paralysis.——Dr. Frederick M. Allen has been appointed professor of internal medicine (metabolism) at the New York Polyclinic Medical School and Hospital, and Dr. Everett M. Hawks, professor of gynecology and obstetrics.

Society News.—Dr. P. Brooke Bland, Philadelphia, at the invitation of the department of gynecology of the New York Post-Graduate Medical School and Hospital, will deliver a lecture, February 6, in amphitheater B of the hospital, on "Causes and Treatment of Genital Discharge"; Dr. Bland will hold a gynecologic operative clinic at 2 p. m. on the same day.——Drs. Howard A. Kelly and Grant E. Ward, Baltimore, addressed the New York Physical Therapy Society, January 7, on "Electrosurgery in Extensive and Inoperable Malignancy."——The Harlem Medical Association was addressed, January 7, by Drs. Julius Jarcho on "Physiological and Pathological Changes in the Uterus and Tubes as Revealed by the Roentgenogram," and Ross McPherson, "Management and Treatment of Placenta Praevia."——Officers of the New York Academy of Medicine were elected, Dec. 18, 1930, as follows: Drs. John A. Hartwell, president; John O. Polak, vice president, and Foster Kennedy, recording secretary.——A new four story headquarters building was opened, January 8, by the Visiting Nurse Association of Brooklyn.——A debate on "Does Society Stand to Benefit, Were Future Dentistry to Be Practiced as a Specialty in Medicine," was held, January 15, by the Harlem Dental Society; Alfred T. Rasmussen, D.D.S., La Crosse, Wis., spoke for the affirmative side, and Maurice William, D.D.S., for the negative.——Dr. Gerhard L. Moench addressed the Medical Society of the County of Queens, January 9, on "Treatment in Office Gynecology, with Special Reference to Diathermy."

V 96
1931

OHIO

University News.—The new Charles Franklin Kettering Laboratory of Applied Physiology at the University of Cincinnati College of Medicine, Cincinnati, was dedicated, Dec. 12, 1930; it is designed primarily for research work in occupational diseases. Dr. Robert A. Kehoe is director. Mr. Kettering of Dayton and other industrial leaders, who contributed $130,000 for erection of the laboratory, have provided an annual fund of $40,000 for its operation.

Personal.—Dr. John Stewart Hagen, Cincinnati, was recently appointed a member of the State Medical Board to succeed the late Dr. John K. Scudder.——Dr. Forrest R. Stewart, Ironton, was elected health commissioner of Lawrence County, Dec. 26, 1930, succeeding Dr. Edwin M. Martindill, Chesapeake.——Dr. Edgar L. Vermilya was recently appointed city health commissioner of Fremont for his twenty-third term.——Dr. Clarence D. Barrett has resigned as health commissioner of Lorain County, it is reported, to accept a position as chief of the bureau of communicable diseases of the state department of health of Michigan.

Society News.—Dr. Erastus B. Gillette was elected president of the Academy of Medicine of Toledo and Lucas County recently, and Dr. Alfred P. Hancuff was reelected secretary.——Dr. Lewellys F. Barker, Baltimore, addressed a joint meeting of the Cleveland Dental Society and the Cleveland Academy of Medicine, January 5, on interrelated functions of the dentist and family physician in preventive fields.——Dr. Frederick B. Utley, Pittsburgh, addressed the Hancock County Medical Society, January 5, on "The Relationship of Focal Infection to General Medicine."——The Union Medical Association was addressed in Akron, January 14, by Judge Fritch of Akron on "The Value of a Doctor's Testimony in a Court of Justice"; Dr. George W. Hall, Chicago, spoke on "Psychology—What Is It? How Can It Be Used by the Doctor to the Best Advantage in His Practice?"——Dr. John O. Polak, Brooklyn, addressed the Academy of Medicine of Cincinnati, Dec. 15, 1930, on "Pathology of Puerperal Infections and Their Present-Day Therapy."——Dr. Frank J. Gallagher, Cleveland, addressed a recent meeting of the Trumbull County Medical Society, Warren, Nov. 20, 1930, on "Lung Abscess: Its Diagnosis and Treatment." Drs. F. Janney Smith and Daniel P. Foster, Detroit, addressed the Wayne County Medical Society, Wooster, Dec. 9, 1930, on "Treatment of Pneumonia in Its Various Forms" and "Dietary and Insulin Treatment of Diabetes," respectively.——Dr. John A. Riebel, Columbus, addressed the Fairfield County Medical Society, recently, at Lancaster on "Surgery of the Extremities."——Dr. Eslie Asbury, Cincinnati, addressed the Ross County Academy of Medicine, Chillicothe, Dec. 4, 1930, on "Mechanical Derangement of Knee Joint," illustrated.

PENNSYLVANIA

Society News.—Drs. William Gerry Morgan, Washington, D. C., and John Whitridge Williams, Baltimore, addressed the eighty-second annual meeting of the Lycoming County Medical Society, Williamsport, January 9, on "Observations on Etiology" and "Posterior Occipital Presentations and Their Treatment," respectively.——Dr. Henry Furniss, New York, addressed the Pittsburgh Urological Association, January 12, on "Uretero-Intestinal Anastomosis: A Consideration of Its Applicability, and Description of Technic."——The Cambria County Medical Society was addressed in Johnstown, Dec. 11, 1930, by Dr. Robert C. Davis, Johnstown, on "Treatment of Varicose Veins."——Dr. Frank C. Parker, Norristown, addressed the Lackawanna County Medical Society, Scranton, recently on "Senile Cataract from the Standpoint of the General Practitioner," illustrated.

Philadelphia

Dr. Flexner Awarded Gerhard Medal.—Dr. Simon Flexner of the Rockefeller Institute for Medical Research, New York, was awarded the William Wood Gerhard Gold Medal of the Pathological Society of Philadelphia, January 8. Dr. Flexner addressed this meeting on "Two Modern Plagues."

Society News.—Dr. Henry J. Bartle delivered an address in the series of graduate seminars given under the auspices of the Philadelphia County Medical Society, January 16, on "Gall Tract Investigation by the Use of the Duodenal Tube—Anatomy and Physiology," illustrated.——Drs. Henry K. Pancoast and Eugene P. Pendergrass, among others, addressed the Philadelphia Pediatric Society, January 13, on "Modern Roentgenologic Aspect of the Thymus in Infancy."——Dr. Thomas E. Carmody, Denver, addressed the Philadelphia Laryngological Society, January 6, on "Development and Other Studies on the Accessory Sinuses of the Nose."——The College of Physicians of Philadelphia conducted a symposium on the therapeutic use and abuse of fluids, January 7, the speakers being Drs. Hobart A. Hare, Isador S. Raydin, James Harold Austin, Richard A. Kern, Lee A. Rademaker, John H. Gibbon, Damon B. Pfeiffer and Thomas McCrae.——A symposium on gastric ulcer was conducted by the Philadelphia Roentgen Ray Society, January 8; the speakers were Drs. Lewis Gregory Cole and Oscar V. Batson, both of New York.——Dr. Jacob Hoffman addressed the Obstetrical Society of Philadelphia, January 9, among others, on "Effect of Anterior Hypophyseal Implants on Senile Ovaries in the Mouse."——Dr. Wilmer Krusen addressed the Philadelphia Medical Examiners' Association, January 12, on "The Doctor in Literature."

RHODE ISLAND

Society News.—The Providence Medical Association was addressed, Dec. 1, 1930, by Drs. Clifton B. Leech on "Congenital Heart Disease: A Clinical Analysis of Eighty-Two Autopsied Instances from the Johns Hopkins Hospital," and Russell S. Bray, Pawtucket, "Diagnostic Value of Bile Drainage"; Dr. George M. Dorrance, Philadelphia, addressed the association, January 5, on "Treatment of Cleft Palate," and conducted an operative clinic on cleft palate at the Rhode Island Hospital.——Dr. Arthur R. Newsam, Providence, addressed the annual meeting of the Washington County Medical Society, January 14, at Westerly, on pediatrics.

TEXAS

Society News.—Physicians of the Southern states and Mexico are invited to attend the third annual spring clinical conference of the Dallas Southern Clinical Society, during the week of March 30. In addition to ninety-six hours of graduate work offered by local physicians, seventeen guest speakers will give lectures and hospital demonstrations. Among them are Drs. Walter C. Alvarez, Rochester, Minn.; Louis J. Hirschman, Detroit; Morris Fishbein, editor of THE JOURNAL, Russell M. Wilder, Clifford G. Grulee, Lewis J. Pollock, Austin A. Hayden and William A. Pusey, all of Chicago; Chevalier Jackson and Henry K. Pancoast, Philadelphia; Dean Lewis, Baltimore, and C. Jeff Miller, New Orleans.

Health at El Paso.—Telegraphic reports from eighty-one cities with a total population of 36 million to the U. S. Department of Commerce, for the week ended January 8, indicate that the highest mortality rate (27.8) appears for El Paso, and the mortality rate for the group of cities as a whole was 13.4. The mortality rate for El Paso for the corresponding period last year was 21.8, and for the group of cities, 13.3. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate. The annual death rate for the fifty-two week period ended Dec. 27, 1930, for eighty-one cities was 11.9 per thousand of population, as compared with 12.6 for the corresponding period of 1929.

VERMONT

Society News.—Dr. Truman J. Allen, Brandon, addressed the Washington County Medical Society, Dec. 11, 1930, on mental deficiency.——Dr. Lyman Allen, Burlington, addressed the Addison County Medical Society, Nov. 26, 1930, on "Injuries of the Head."

WASHINGTON

Personal.—Dr. Abraham Poska, Seattle, has been appointed a member of the state board of medical examiners to succeed Dr. Edward C. Ruge, resigned.——Dr. George W. Overmeyer recently became medical adviser for the Old Soldiers' Home at Port Orchard.

Society News.—Dr. George R. Vehrs, Salem, Ore., addressed the King County Medical Society, Seattle, Dec. 1, 1930, on "Heart Beat and Respiration in Total Novocain Analgesia"; Dr. George W. Swift reported a five years' study of epilepsy and Dr. John S. Lingenfelter presented a case report on "Thrombocytopenia—Favorable Treatment by Splenectomy."——Dr. Emil Ries, Chicago, gave the annual lecture at the meeting of the North Pacific Surgical Association, Tacoma, Dec. 5, 1930, on "Carcinoid Phases of Cervix Uteri."——The King County Medical Society was addressed, Nov. 3, 1930, among others, by Drs. Norman W. Clein, Seattle, on "The

Successful Treatment of Cerebral Hemorrhage in the New-Born," and Souren H. Tashjian, "Clinical Significance of Crypts of Morgani"; a portrait of Dr. Casper W. Sharples, painted by Muehlenbeck and a gift from Dr. Alexander H. Peacock, was presented to the society.——"Acute Infections of the Palm of the Hand" was the subject of Dr. Whiting B. Mitchell, Sumner, before the Pierce County Medical Society at Tacoma, November 11; Drs. Charles H. Aylen and Frederick L. Scheyer, Puyallup, spoke on "Spastic Ileus" and "Friendly and Unfriendly Relations Between County and City Doctors," respectively.——The first joint meeting of the Yakima County Medical Society and the Yakima Dental Society was addressed, Nov. 10, 1930, at Yakima by Dr. Robert L. Benson and W. Claude Adams, D.D.S., Portland, on "A Hopeful View of Asthma" and "Oral Problems of Equal Interest to the Physician and Dentist," respectively.

WEST VIRGINIA

Society News.—Dr. William S. Baer, Baltimore, addressed the Ohio County Medical Society, January 16, at Wheeling, on "Treatment of Osteomyelitis." Dr. Henry J. John, Cleveland, addressed the society, January 9, on "Surgery in Diabetes."

Personal.—Dr. William Dennis McClung, superintendent of the Spencer State Hospital since 1921, was appointed superintendent of the Huntington State Hospital by Governor Conley recently to succeed the late Dr. Lewis V. Guthrie; Dr. Donzel D. Chapman, assistant superintendent of the Weston State Hospital, was appointed to succeed Dr. McClung.

GENERAL

Prize for Research on Goiter.—The American Association for the Study of Goiter announces that an award of $300 will be made for the best paper based on original research on any phase of goiter presented at the annual meeting in Kansas City, Mo., April 7-9. Manuscripts must be in the hands of the secretary, Dr. Julius R. Yung, Terre Haute, Ind., not later than April 1.

Dr. Meyer Receives Salmon Memorial Award.—Dr. Adolf Meyer, professor of psychiatry, Johns Hopkins University School of Medicine, and director, Henry Phipps Psychiatric Clinic, Johns Hopkins Hospital, Baltimore, received the first annual award under the memorial fund recently established (THE JOURNAL, January 3, p. 47) in honor of the late Dr. Thomas W. Salmon, it was announced at the memorial meeting held at the New York Academy of Medicine, January 10. Dr. Meyer will deliver the Thomas W. Salmon Memorial Lectures for 1931 and will receive an honorarium of $2,500. The dates and places for the lectures will be announced later. Dr. Meyer, a native of Switzerland, came to the United States in 1892. He was a teacher of psychiatry and neurology at the University of Chicago, Clark University and Cornell University before going to Johns Hopkins. He is past president of the American Psychiatric Association and the American Neurological Association.

Four Weeks of Automobile Fatalities.—Seventy-eight large cities in the United States reported 812 deaths from automobile accidents to the U. S. Department of Commerce, during the four weeks ended Dec. 27, 1930, as compared with 646 deaths during the four weeks ended Dec. 28, 1929. Most of these deaths were the result of accidents that occurred within the corporate limits of the city, although some accidents occurred outside the city limits. The number of deaths due to automobile accidents within city limits was 669 for the four week period ended Dec. 27, 1930, as compared with 558 for the corresponding four weeks in 1929. For the fifty-two week periods ended Dec. 27, 1930, and Dec. 28, 1929, the totals for the seventy-eight cities were, respectively, 8,687 and 8,403, which indicate a recent rate of 25.2 per hundred thousand of population as against an earlier rate of 24.8. Three cities reported no deaths from automobile accidents for these four weeks, while four cities reported no deaths from this cause for the corresponding weeks of 1929.

Registration Under Harrison Narcotic Act.—The Collector of Internal Revenue of the Chicago district writes that the Commissioner of Internal Revenue is sending to all registrants under the Harrison Narcotic Act a notice calling attention to section 1 of the act of Dec. 17, 1914, as amended, which provides for the registering with the Collector of Internal Revenue on or before July 1 of each year, or before the date on which liability is incurred. The Chicago collector has checked the records of registrations in that office and found that some narcotic registrants have been delinquent several times. In these cases it is to be the policy of the commissioner's office to instruct the Chicago office to notify these delinquent registrants of their privilege of submitting offers in compromise in lieu of the specific penalty incurred. The Harrison Narcotic Act (section 9) provides that any one who violates or fails to comply with its requirements shall be fined not more than $2,000 or imprisoned more than five years, or both, in the discretion of the court. In order to avoid the penalty provided by the law, registrants are urged to file their return and pay the special tax on or before the due date.

Society News.—President Hoover has invited fifty-two nations to participate in a World Conference on Work for the Blind in New York City next April, it is reported; acceptances have been received from twenty-seven countries, according to Robert B. Irwin, executive director of the American Foundation for the Blind, who is chairman of the organizing committee.——Dr. Howard T. Karsner, professor of pathology, Western Reserve University School of Medicine, Cleveland, was elected chairman of Section N (medical sciences) at the meeting of the American Association for the Advancement of Science, Cleveland, Dec. 29, 1930-Jan. 2, 1931, succeeding Dr. Louis B. Wilson, Rochester, Minn. Franz Boas, Sc.D., professor of anthropology, Columbia University, was elected president. The annual $1,000 award was presented to M. A. Tuve, L. R. Hafstad and O. Dahl, all of the Carnegie Institution, Washington, D. C., for a paper describing experiments with high voltage x-ray tubes.——The ninth annual fall clinical conference of the Kansas City Southwest Clinical Society will be held in Kansas City, Mo., October 5-10.——Elihu Root has been elected honorary president of the National Society for the Prevention of Blindness, succeeding the late William Howard Taft, who had held the post from the beginning of the society in 1915.

Medical Bills in Congress.—S. 5166, introduced by Senator Steiwer, Oregon, proposes to authorize the erection of a new administration building at the veterans' hospital, numbered 77, Portland, Ore. S. 5348, introduced by Senator Phipps, Colorado, proposes to authorize the construction of additional hospital facilities at the Fitzsimons General Hospital, Denver. S. 5465, introduced by Senator Capper, Kansas, proposes to amend subchapter 1, chapter 18, Code of Laws for the District of Columbia, relating to degree-conferring institutions, by providing that no institution heretofore incorporated under the act, and carrying on its work exclusively in any foreign country with the consent and approval of the government thereof, shall be denied a license by the board of education solely because of the inclusion in its name, and as descriptive of its origin, of any of the specific words the use of which is forbidden by the act to institutions incorporated thereunder. The words referred to include "United States," "American" and "National." H. Res. 333, introduced by Representative Ragon, Arkansas, proposes that the speaker of the House of Representatives appoint a committee to investigate the health of persons who may be suffering in drought-stricken areas or in industrial centers in which severe unemployment prevails. H. R. 15140, introduced by Representative Dowell, Iowa, proposes to authorize the erection of an addition to the veterans' hospital at Knoxville, Iowa. H. R. 15262, introduced by Representative Hale, New Hampshire, proposes to authorize the erection of a veterans' hospital in New Hampshire. H. R. 15771, introduced by Representative James, Michigan, proposes to authorize additional hospital facilities at the veterans' hospital at Oteen, North Carolina. H. R. 15868, introduced by Representative Johnson, South Dakota, proposes to increase disability allowances to certain soldiers and sailors of the World War and to certain widows, minor children and mothers of such soldiers and sailors. H. R. 15997, introduced by Representative Patman, Texas, proposes to authorize the admission in the National Home for Disabled Volunteer Soldiers of honorably discharged officers, soldiers, sailors or marines, and certain others, who served in the military or naval forces of the Confederate States. H. R. 15998, introduced by Representative Patman, Texas, proposes to amend the World War Veterans' Act to provide hospital facilities for persons who served overseas as contract surgeons of the army at any time during the Spanish-American War, and for all persons who served in the military or naval forces of the Confederate States, not dishonorably discharged, without regard to the nature or origin of their disabilities. H. R. 16075, introduced by Representative Cooke, New York, proposes to authorize the erection of a veterans' hospital in the western part of the state of New York, in or near the city of Buffalo. H. R. 16114, introduced by Representative Patterson, Alabama, proposes to authorize the erection of an addition to the veterans' hospital, numbered 91, at Tuskegee, Alabama.

V 96
1931

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 27, 1930.

Compulsory Insurance for Motorists

January 1 there will come into force part II of the road traffic act, which obliges motorists either to insure against their liability for personal injuries to third parties or to make other provisions for it as prescribed by the act. Most motorists will insure and must on demand from a policeman produce a certificate of insurance. The following alternatives to insurance are prescribed by the act: 1. The obtaining of a bond of security to make good any failure of the motorist to meet his liability for personal injury to third parties. In the case of public service vehicles this sum must be not less than $125,000; in other cases not less than $2,500. 2. For the owner of the vehicle to deposit with the supreme court a sum of $75,000 as a guarantee of his ability to meet his liabilities. Neither of these alternatives is likely to make a wide appeal to the motorists, who will in most cases extend their present insurance policies. The great expense of motor accidents to hospitals and the impossibility of recovering more than a small part of the outlay has been stated in previous letters. A clause has been included in the act whereby insurers are liable to reimburse any hospital in which the injured person has been treated as an inpatient the cost of the patient's treatment and maintenance therein to a maximum of $125.

Limitation of Manufacture of Narcotics

The League of Nations has published the report of a meeting of official representatives of drug manufacturing countries held in London in October in connection with the forthcoming conference on the limitation of the manufacture of dangerous drugs. The meeting was held to consider the proportions of the amount to be manufactured which should be allotted to different countries and arrangements for the proper distribution to the consuming countries. Unfortunately, an agreement on the allocation of quotas to manufacturing countries was not possible, though a provisional agreement was reached as to cocaine. The manufacturing countries put forward the following suggestions for quotas, in the form of percentages: Morphine and its derivatives: Germany, 39.97; Switzerland, 25.2; France, 21; Great Britain, 13.83. Cocaine: Germany, 49.3; France, 20; Great Britain, 15; Netherlands, 10.28; Switzerland, 5.42. The German French and Swiss delegates were agreeable to these quotas, but those representing Great Britain and India made criticisms, which were supported by other delegates. The first was that the manufacturers had worked on a different basis from that adopted in the plan of limitation of the advisory committee and had indeed arrived at figures that exceeded the quotas of national production. In the case of a Swiss firm having factories also in Germany, part of the German provision had been credited to the Swiss quota. The second criticism was that the quotas did not cover the whole field of drug production—morphine used in the manufacture of "specialties "having been excluded. Finally, no apparent relation existed between the figures of export during recent years, prepared by the league, and these proposed quotas. The conference felt that the matter required further examination and the delegates agreed to further discussion before the January meeting of the league advisory committee. Turkey, which has come forward as a manufacturer of narcotics by the establishment at Constantinople of three factories, the largest of which has been built by persons deprived of their licenses by the French government because of illicit traffic, made a modest demand for a third of the whole world production. It appeared that a large part of the output of these factories was used for illicit trade. The Turkish delegates gave figures of exports to Italy, France and Germany, which the representatives of these countries declared to be unauthorized. Moreover, these exports had not been reported, as they should have been, to the permanent central board of the league. Also seizures had been made at Marseilles, Rotterdam, Hamburg and Hongkong of large quantities of drugs concealed in ships from Constantinople. Indeed no part of the output of the Constantinople factories appeared to be for medical or scientific purposes. According to the information furnished by the Turkish delegation itself there are annually exported from Turkey, 5,200 Kg. of morphine and over 8,650 Kg. of heroin—figures which the *Times* describes as "terrible." A league expert, Dr. Anselmino, estimates that the legitimate annual requirements of the world do not exceed 12,000 Kg. of morphine and 5,800 Kg. of heroin. Thus, Turkey is exporting nearly half the world's requirements of morphine and much more than half its requirements of heroin. And yet Turkey is not yet classified as a manufacturing country and officially produces nothing. This the *Times* terms "scandalous." Here is a possible source of the 1,100 pounds of morphine unloaded in New York as "furs" and seized by the federal agents.

Committee Reports on Abolition of Death Penalty

The select committee of the house of commons on capital punishment has presented its report. The recommendations are made by the seven labor and two liberal members of the committee, but the six conservative members refused to endorse them. Of capital punishment as a deterrent, the report, while admitting the influence of fear, concludes from the evidence submitted that most murders in this country are the result of sudden impulse or overmastering passion, into many of which the thought of penalty can hardly have entered, although many were not without premeditation. Even if capital punishment, asks the committee, is the greatest deterrent, are the cases in which it acts sufficient to compensate for its disadvantages? Examination of the situation in foreign countries has convinced the committee that capital punishment may be abolished in this country without endangering life or property or impairing the security of society. The report therefore recommends abolition for a period of five years and substitution of penal servitude for life. But there would be a prospect of release after a period of years, following considerations as to the conduct of the prisoner and the safety of society. The report does not endorse the fear expressed in the evidence that lynch law might result from the abolition of the death penalty, considering that this practice is alien to the habits of the British people. With regard to the question of insanity and murder, the committee holds that the McNaghten rules should be brought down to date so as to give the fullest scope to medical considerations and extend in some way the area of criminal irresponsibility. The McNaghten rules are that irresponsibility for murder can be established only by showing that the prisoner either did not know the nature of his act or did not know that the act was wrong. But the medical profession has always contended that irresponsibility extends to a wider sphere and that a man may know that he is committing murder and know that he is doing wrong yet, as the result of mental disease be seized with an irresistible impulse, which therefore makes him irresponsible. Lawyers and judges generally refuse to admit this. Hence frequent conflicts between the two professions at murder trials.

Demand for the Pasteurization of Milk

In a joint letter to the *Lancet*, Lord Dawson, Sir Thomas Horder, Dr. Robert Hutchison and other leaders of the profession commend the grading system, which has been introduced for the purpose of improving the milk supply. Only a small proportion of the public can afford to purchase milk that conforms to the highest standard defined by the ministry of health, and this applies to the other grades which come between it

and pasteurized milk, which is the form generally distributed in the centers of population. Pasteurization has been found almost to eliminate infection traceable to milk. The signatories agree that the time has arrived when, in order to increase milk consumption and diminish the risk of milk infection, pasteurization should be universal. At present about 90 per cent of the London milk supply is pasteurized, with markedly beneficial results. They hold that the first step in educating the public to demand pasteurized milk should be the simplification of the present milk grading system and the clear labeling of pasteurized milk as such.

Birth Rate in Northern Ireland Falls

The fall of the birth rate is not only continuous for the whole country but general, affecting all parts. This is illustrated by the figures for northern Ireland, just published. There the birth rate has fallen steadily and for 1929 was the lowest recorded, 20.4 per thousand of the estimated population, which was 0.4 below the rate for the previous year and 2.4 below the average rate for the preceding ten years.

Street Accidents and First Aid

The increase of street accidents is so great that a more widespread instruction in first aid, so that onlookers may be able to deal with them, is being considered. The first thought of those who witness an accident is to rush forward and try to give assistance, sometimes with disastrous results. They will drag the victim on to the pavement without regard for the injury they may inflict. Much has been done to spread wider knowledge of what to do. In future, every metropolitan policeman will be instructed in first aid. The British Red Cross Society and the St. John Ambulance Association are making every effort to spread a knowledge of what should be done in case of accidents. The latter holds many hundreds of classes every year and it is gratifying that the numbers coming for instruction increase each year. More than double the number of certificates granted for first aid in 1920 were given in 1930.

PARIS

(From Our Regular Correspondent)

Dec. 17, 1930.

Chemicals Added to Flour

In many parts of France, complaints have been made because of the inferior quality of the bread. The complaints doubtless in part date from the war period, when the scarcity of wheat made necessary the addition to wheat flour of flour derived from other grains or from legumes. In some instances the bakers have continued this practice, as it increases the profits. Some even add powdered minerals to increase the weight of bread. Successive decrees have restricted the authorized use of flours other than wheat flours to the periods when there is a deficiency of wheat flour, which does not obtain at present. A decree dated Nov. 7, 1930, prohibits the addition of any mineral matter that is not authorized by the superior council of hygiene. This decree was aimed particularly against the salts used to bleach gray flour and to facilitate bread making. The council of hygiene, basing its action on the report of Mr. Bordas, has recently authorized the use of such substances as are employed only to promote the action of the yeast; namely, potassium bromate, at the rate of 2 mg. per hundred grams of flour, which constitutes 10 mg. of bromide per kilogram of flour, a negligible quantity, and even less than the amount contained in ordinary table salt; and ammonium persulphate, at the rate of 3 mg. per hundred grams of flour. Sodium perborate, much used in the past, has been prohibited. Mr. Bordas has stated that the reasons for the acceptance of these substances are that they facilitate the action of the yeast and the rising of the dough, and, in addition, make it easier for the baker to prepare the yeast when French wheat is used. Messieurs Desgrez and Boun of Paris and Mr. Laborde of Strasbourg performed experiments on guinea-pigs for two months, using wheat that contained the permitted quantities of bromate and persulphate. The animals thus fed developed as well as the control animals and exhibited no changes in their organs.

Millions Requested in Colonial Health Budget

The question of public health in the colonies is vital as regards not only the European colonists but also the natives. The mortality of the natives from disease, in connection with such undertakings as the building of railways and the digging of canals, tends to diminish the local labor supply; and the child mortality, which remains high, is gradually depopulating the country and preparing the way for an invasion by more hardy or better educated races. An endeavor has been made to develop medical facilities for the natives, including dispensaries, and laboratories for the preparation of vaccines, and, finally, to introduce a more rational diet. The natives are nearly always underfed, contenting themselves with fruits and roots. The number of colonial physicians has been considerably augmented, but an adequate number cannot be secured without offering attractive salaries, which have thus far not been forthcoming. The creation of schools of colonial medicine at Bordeaux and at Marseilles and of a special institute at Paris for the study of parasites and tropical micro-organisms has completed the vast program. For the past ten years, the budgets of public health for each colony have been regularly augmented: on the Congo and in Cameroons, Indo-China, Madagascar, French West Africa, and especially in French Equatorial Africa, where the native mortality is the highest. The sum of $12,000,000 has been provided for the first three colonies, $1,680,000 for French West Africa, $2,400,000 for Madagascar, and $3,000,000 for French Equatorial Africa. The total budget to be submitted to the senate for the protection of the public health of the colonies amounts to $19,080,000.

The Difficulties Encountered in Social Insurance

The social insurance law has been in effect only six months, but protests are being heard on every hand. As it was easy to foresee, the cost of administering the law will be much higher than expected. The government has announced that already 8,000,000 workmen have been registered. But, since there were already 6,000,000 members enrolled in the mutual benefit associations—which were turned over automatically to the government officials who administer the sick benefit funds, that signifies only 2,000,000 new members registered, a figure showing that many workmen are refusing to register. The reasons that they assign are of an elementary order but unassailable. A female worker finds that, if she marries and stops working, the money that she has paid in for health insurance will be entirely lost to her. An employee calls attention to the fact that, if his salary should be increased to an amount above $720, which is the upward limit of the annual income that is subject to compulsory insurance, likewise his payments will be lost. The same is true in case of premature death. In families, domestics are refusing to pay their assessments and, since the law makes the head of the family responsible for their payment, the new charge, for two or three domestics, will amount to from 1,200 to 1,800 francs a year. The cost of the participation of the government in the insurance was first estimated at $2,400,000 annually. The estimate has now been raised to $2,840,000. The total contributions of the employers and the employed amount to $33,200,000 a year, and so large a sum must necessarily have the effect of increasing the cost of living through advances in the prices of commodities and the diminution of the buying power of the employees. Experts have calculated that, when the law begins to function to the fullest extent, it will constitute an amount which (totaling the participations of the government, the employers and the employees) will reach the stupendous sum of 20,000,000,000 francs a year ($800,000,000), or one third of the present budget

V 96
1931

of France. Parliament, which passed this surprise legislation under the pressure of the socialists, is beginning to take account of its action and to feel some anxiety. The strangest thing is that there is a tendency among the deputies to accuse the medical profession of being the cause of the present difficulties. It will be recalled that the medical profession succeeded, through the energetic resistance of its syndicates, in retaining the privilege of maintaining its own tariff schedule, and in keeping for the insured the right to choose his own physician. The administration of the sick benefit funds pays to the physician the sum of 12 francs (48 cents) for each visit or consultation, irrespective of the amount the insured pays the physician directly. As this sum, except for the poor, is never less than 15 francs (60 cents), the minimum of the syndical tariff, and the physician has the right to demand immediate payment in return for a receipt, the insured, who were under the impression that they had the right to free treatment, are disillusioned; hence, countless complaints. The physician, who heretofore treated his own domestics gratuitously, lets them now pay for their treatment, since he pays for them a double assessment to the sick fund administration, and nothing could be more legitimate. The deputies also are protesting. And at a recent session of the senate, a senator uttered the gravest threats against the medical profession, and announced the filing of a bill to impose a reduced tariff schedule and to compel the insured to request treatment only of physicians approved by the sick fund administration. The guarantees obtained after much labor by the medical syndicates are therefore going to be reconsidered. It is evident that the troubles will soon start anew; for the physicians have fully made up their minds that they are not going to bear the expense of this socialist experiment.

Ambassador Edge Awarded Doctor's Degree

The University of Nancy, at its reopening ceremonies, awarded honorary doctor degrees to the Belgian professors Bordet, Victor Grégoire and Visscher; to Mr. Albert Blum, a former resident of Alsace now residing in America, who has been a benefactor of the University, and to the Honorable Walter P. Edge, ambassador of the United States to France. Mr. Edge went in person to Nancy to attend the ceremonies at the university and to receive the insignia of his degree. He expressed in fitting terms his appreciation of the honor conferred on him and referred to his predecessor, Hon. Myron T. Herrick, who was likewise a doctor of the University of Nancy, and also to Marshal Foch and to Mr. Raymond Poincaré, who were former students.

Indignation over Income Tax Investigations

The creation of the income tax, a few years ago, has raised grave difficulties. The physicians opposed the demand that they submit their bookkeeping records to government inspectors for examination in the same manner as commercial houses are compelled to do, pleading as protection the right of privileged communication. The physicians won their contention and the treasury had to content itself with a sworn statement of a physician as to the amount of his receipts and expenditures. But a new offensive has been launched. The physicians are in receipt of a circular letter requesting them to make known to the income tax inspectors the average amount received for their consultations and their visits, a designation of the section in which they practice their profession, the number of surgical interventions that they have performed and the amount received therefor, and the amounts that they have received by way of "returns" from surgeons to whom they have referred their patients for an operation, or in the form of commissions on pharmaceutic products. The last question, which appears to take as a matter of course dishonorable practices of which the whole medical profession disapproves, has aroused deep indignation. This latest insult furnishes further evidence of the iniquitousness of this law, which claims the right to pry in a most indiscreet manner into the life of every physician, whereas former legislation secured just as good results by the levying of taxes on visible expenditures (rent, domestics, carriages), easy to control, and requiring no veritable inquisition on the movements of citizens.

Effects of the Tarring of Highways on the Propagation of Cancer

The tarring of highways to assure their conservation and to facilitate their use for automobile traffic is coming rapidly into vogue in France. The method was introduced by Dr. Guglielminetti, a Swiss physician residing at Monaco. In 1922, 30,000 tons and in 1929, 360,000 tons of tar were used for this purpose in France; 25,000 kilometers of highway have been tarred, and it has been figured that the method saves $4,000,000 a year in the upkeep of the highways. However, while this system satisfies automobilists, it appears that it is not exempt from disadvantages, as further experience has revealed. In the first place, the particles of tar in the air have a damaging influence on the foliage along the highways. Then, Dr. Foveau of Courmelles has uttered a cry of alarm and awakened the fear that the tarred highways may cause an increase of cancer. He bases his fears on the existence of experimental cancer in mice succeeding local applications of tar and on the skin cancers observed in workmen who handle tar. Foveau fears that the dust of the road, when composed of siliceous granules with sharp points and edges, and impregnated with tar, may cause traumatisms of the mucosae of the respiratory and the digestive tracts, capable of producing cancer, just as pulmonary tuberculosis may be facilitated in cutters of millstones by the siliceous dust that they inspire. It must be admitted, however, that no direct proof has been adduced in support of this hypothesis, which appears thus far to be only a mental conception. It has nevertheless caused considerable anxiety among automobilists.

BERLIN

(From Our Regular Correspondent)

Dec. 15, 1930.

Report on the Infant Deaths in Lübeck

Professor Neufeld, the director of the Preussisches Institut für Infektionskrankheiten Robert Koch, publishes in the *Deutsche medizinische Wochenschrift* a comprehensive article on the infant deaths in Lübeck and the present status of the Calmette question. He reports first on the examinations of the cultures used in Lübeck, as carried out in his institute by Prof. Bruno Lange. These examinations involved a Calmette culture preserved in the laboratory of Professor Deycke, a culture turned over by Professor Deycke that he had grown from a guinea-pig that had been inoculated by him with one of his Calmette cultures; furthermore, a partly decomposed mesenterial gland taken from an infant that had received the B C G vaccine but that had died from another cause, and, finally, organs of three infants who, following inoculation with the B C G vaccine, had died from tuberculosis that developed in the intestine. Inoculation not only with portions of the organs but also with cultures derived from the organs caused tuberculosis to develop in the guinea-pig. From the results of the experiments it is plainly evident that for the preparation of vaccine material in Lübeck partly guinea-pig pathogens and partly apathogenic cultures were employed. These observations are supplemented by investigations of the federal bureau of health. The bureau of health utilized not only cultures from the Lübeck laboratory but also small remnants of vaccine material prepared from them and used for the vaccination of children. From one such remnant virulent tubercle bacilli were grown and, from another, bacilli corresponding to those of the B C G vaccine were cultivated. With the described observations coincides the fact that during a certain vaccination period there were many infant deaths, while, at other times, comparatively few deaths and few

severe illnesses were observed. Further results of the investigations make it seem likely that the culture derived from an infant that had died from ingestion tuberculosis is identical with the tubercle bacillus strain H 29 of the Robert Koch Institute and the derivative therefrom found in Lübeck, the "Kiel" culture, and that the latter culture was utilized by mistake in the preparation of the vaccine materials. It is possible that the mild course of the infection in a number of infants that were taken ill was due to the comparatively weak virulence of this strain. On the basis of his long experience in this field, Neufeld assumes, for the present, a skeptical attitude toward the suggestions of Petrov and of Watson with regard to the possibility of a B C G culture reverting to a virulent form. Concerning the value of the Calmette vaccination, Neufeld made the following statement: "It is quite right that Calmette's statistics are very generally discounted, but unduly optimistic statistics have been published on other inoculation methods that have finally proved to be useful in general practice, and the careful observations extending over a long period made by Park and Kereszuri of New York and by Heimbeck and Scheel of Norway furnish evidence for a possible success of the Calmette inoculations. There is no other way of reaching a final judgment in the matter than by making careful observations on a large number of vaccinated children." However, the preparation and permanent control of the vaccine material must be left entirely to the larger tuberculosis laboratories that are licensed by the authorities and that should be provided with the proper equipment for their responsible task. These final statements of Neufeld have been given with some detail because they present calm and critical views and, at the same time, the latest results of the investigation.

The next Berlin letter will give the decision of the federal health council, which is planning to take up the Lübeck affair within the next few days.

Results of the Emergency Decrees

The so-called *notverordnung*, or emergency decree, issued by the federal government in July, 1930, has introduced certain limitations with regard to the solicitation of aid from the administration of sick benefit funds. The two most conspicuous provisions are that the patient who wishes to consult a physician must first secure a sickness certificate, for which he pays the sum of 12 cents, and that he must likewise contribute 12 cents toward the cost of filling a prescription. Of greater importance for the medical profession, however, is the fact that certain other regulations authorize an immoderate control over panel physicians such as the medical profession cannot accept. It goes without saying that the physicians must defend themselves to the utmost against such an unquestionably one-sided attack on a liberal profession, and especially a profession that is the promoter and defender of cultural and social ideals. The second emergency decree, of Dec. 1, 1930, grants to the insured (provided they are out of work or suffering from a chronic illness) certain easements, but, contrary to the expectations of the medical federations, it brought no changes affecting the medical profession directly and hence failed to afford the necessary relief. Therefore a manifesto of the medical profession of Germany was promulgated, December 9, as the result of the action taken by the league of physicians of Germany, with the cooperation of all large medical leagues, together with the faculties of medicine. The speakers and those of the audience who were familiar with the situation were interested particularly in the future of the oncoming generation of physicians, who, owing to the drastic provisions of the decree, have little prospect of being admitted to panel practice within a reasonable time. Unless they are admitted, they will scarcely be able to earn a living. Whereas hitherto an endeavor has been made to reach a satisfactory understanding through negotiation, now since nothing appeared attainable by other means, a resolution has been drawn up, which, in spite of its calm tone, reflects the seriousness of the situation and the firm determination of the medical profession to leave no stone unturned in order to reestablish a workable basis of relationship. The resolution reads as follows:

> In spite of untold sacrifices (particularly during the period of inflation), in spite of refusal to consider its protests with respect to the changed regulations governing panel practice, and in spite of failure to attach weight to the proposals submitted from time to time to the federal government for the solution of the problems affecting the administration of the sick benefit funds, the medical profession of Germany has faithfully supported social health insurance throughout the *reich*, as organized under the existing system. In the interest of social insurance and the preservation of the health of the German people, the medical profession has surrendered, to a great extent, its professional freedom of action. Highly indignant over the rejection of its proposals for the solution of existing problems, which proposals were based on the inalienable rights of the profession, the physicians of Germany hereby decleare that further abridgement of their professional, legal and economic rights must be and hereby is rejected. If the decrees in question are upheld, the medical profession of Germany will be forced to oppose the present system of health insurance and to strive by all possible means to bring about its revision.

It remains to be seen what will now develop. In the meantime, it is to be hoped that the regulations concerning the admission of physicians to panel practice and concerning the unwarranted interference, by medical officials of the bodies administering sick benefit funds, in the management of individual cases will not, in point of fact, be carried out in the manner prescribed in the new regulations.

BELGIUM

(From Our Regular Correspondent)

Nov. 30, 1930.

Instruction in the Management of Tuberculosis

At the seventh conference of the Union internationale contre la tuberculose, held in Oslo, Dr. Derscheid of Brussels discussed the present status of the instruction in the management of tuberculosis. In Belgium, instruction in this subject is not separated from general instruction in medicine. There is no chair of phthisiology in any of the four Belgian universities. In the faculties of medicine, theoretical instruction in the treatment of tuberculosis is in the hands of the professors of internal pathology and the professors of external pathology. Such instruction is supplemented by laboratory courses and drill work in microscopy. The professors in general hygiene give students instruction in the medicosocial organization of the crusade against tuberculosis. Instruction in laboratory methods of analysis is given by the professors of bacteriology. Practical instruction in the treatment of tuberculosis is given in the university hospitals, where committees on public welfare are closely associated with the faculties of medicine, by: (1) the professor of clinical medicine, who devotes each year a number of lectures to the various forms of tuberculosis; (2) the professor of clinical surgery, who, under the same conditions, reserves for the students courses in which tuberculosis of the bones and joints is studied; (3) the professor of clinical surgery as applied to children; (4) the professor of clinical medicine as applied to children, and (5) the professor of clinical skin diseases (lupus and others).

These practical courses are supplemented at some faculties of medicine (notably, at Brussels and at Liége) by visits paid to antituberculosis institutions, where lectures are delivered that emphasize social functioning. The theoretical instruction in tuberculosis in Belgium, as received by the students of medicine, is satisfactory. On the other hand, the writer thinks that the practical and the medicosocial instruction are at present inadequate. It is to be hoped that a closer connection may be established between the university faculties of medicine and the recognized organizations participating in the crusade against tuberculosis. In our times, now that the great problems of public hygiene are assuming ever increasing importance, it is necessary for the oncoming generation of medical men to become familiar, during their studies, with the social rôle that they will be called on to play. The Oeuvre nationale belge de

V 96
1931

défense contre la tuberculose cannot take other than a favorable attitude toward this movement. With respect to instruction in tuberculosis for physicians, it is desirable that *cours libres* be organized every year for the benefit of medical practitioners. The clinical instruction should be combined with practical demonstrations. That has not been done in Belgium as yet. In order to attain that objective and as the first step in such professional movement, the council is planning to propose to the faculties of medicine of the four Belgian universities that a dispensary of the type of the Calmette-Malvoz model be placed at their disposal. Such a dispensary would be conceived and equipped along the most modern lines. In such dispensaries the professors of hygiene would be able to initiate their students in the various aspects of the present crusade against tuberculosis. They will be able to supplement such instruction by visits and lectures at the various antituberculosis institutions scattered throughout Belgium. Also, special short courses for groups of students can be organized in these institutions.

Angioneuromas of the Extremities

In an address before the Socitéé belge de dermatologie, Mr. Halkin recalled the difficulties of diagnosis in a great number of forms of angioneuromas of the extremities. The speaker took up the study of these cases in connection with certain observations that he had made in his department. He mentioned one case in which there was a pronounced hypertension that could not be explained either by renal or by cardiac lesions. Tests applied to the sympathetic system pointed to hyperexcitability of the sympathicus. Under the influence of glyceryl trinitrate, the symptoms of Raynaud's disease, together with the hypertension, retrogressed to a great extent. In another case, not hypertension but the oculocardiac reflex gave evidence of a hypersympathicotonia. In a third case there was spastic cyanosis, a little hypertension and likewise some hypersympathicotonia. A fourth case with hypotension exhibited likewise hypersympathicotonia, in spite of the complete absence of organic defects. But there was also hyperthyroidism. Particularly notable was a retardation of the circulation, which did not prevent the spastic phenomena. Another case showed likewise hypersympathicotonia. The pressure was not the same in the left foot as in the arm. The therapeutic attempts were not successful. In two other cases, also, hypersympathicotonia was observed. But that is not always the case, and Mr. Halkin mentioned cases in which there was no hypersympathicotonia in spite of the cyanosis, which is clinically much the same as that associated with the cases with hypersympathicotonia. In view of these conditions, the patients may be divided into two categories: the spastics and the other cases, usually patients with attenuated tuberculosis, lymphatic types in whom there is no hyperexcitability of the sympathicus. Raynaud's disease, the speaker brought out, is a spastic disorder, in which the cyanosis is only the final phase. It is a question of venous spasm. In the presence of this phenomenon, the use of calcium salts, thyroid, strychnine and the like should be avoided. The best results are obtained by drugs that diminish the blood pressure—notably acetylcholine.

A Fund to Combat Tropical Diseases

The government has decided to accept the participation of la Métropole in the medical fund that is to be created to organize in the colonies a crusade against tropical diseases. It was thought desirable to coordinate the activities of all those who—in Europe or on the Congo—are interested in the health of natives. This coordination of effort will be accomplished through an organization of a civilian character in which will be represented the colony and the principal business enterprises on the Congo, including the scientists, the missionaries and all humanitarian institutions. This organization will be given an endowment, the income from which will permit the creation of medical missions, which will operate on the Congo under the control of the medical authorities of the colony. The colony has promised an appropriation of 100,000,000 francs. La Métropole has decided to donate 50,000,000 francs to the fund.

BUCHAREST

(From Our Regular Correspondent)

Dec. 20, 1930.

Meeting of the Roumanian Medical Association

The Roumanian General Medical Association recently held a house warming in connection with the annual congress. The association moved into its own building. In order to ensure greater attendance, the board of directors provided all members living outside the capital with reduced railway fares. Professor Gheorghiu, president of the association, in his opening address outlined the activity of the central board, elected three years ago. Its first deed was the establishment of branches in all greater centers of the country. It initiated and also completed the erection of a palatial building for the headquarters of the association. As the necessary sum to this end was not forthcoming either from the fund of the association or from the voluntary contributions of members, it decided to issue lottery tickets and to arrange opera performances, and the revenues of these covered all the expenses connected with the association building. Something also was set aside for the future, as there was cash in hand of about 1,000,000 lei. This was a wise thing to do for at present hundreds of members are unable to pay their dues. Savenau, the late minister of public health, raised the state subsidy granted to the association from 50,000 to 500,000 lei yearly. This sum was granted also by his successors Lupas and Inculet, while the present government grants absolutely no subsidy to the association. In 1927 the association concentrated its efforts on the salaries of medical officers of health and of physicians in public services. The results of their intervention were striking as they succeeded in influencing the government to raise physicians as a class in a higher grade of salary. The association arranged the first professional congress in 1927. In the same year between December 16 and 19 the first scientific congress was held, in Arad. In the first weeks of April, 1928, graduate medical courses were arranged in Timisoara. Considering the great number of attendants, the courses succeeded in full measure, so that the board of the association in conjunction with the government made steps for the systematization of these courses. In October, 1928, the second professional congress was held, in Kisenew, the capital of Bessarabia, where more than 500 attended. In May, 1930, a scientific congress was held in Galatz with an attendance of 540. The board of the association protested to the ministry of finance against the excess and abuses in regard of the taxation of physicians, which forced many medical men to withdraw from practice and earn their living in another way. The minister immediately ordered that all financial administration centers be warned to refrain from such excesses in taxation. The board of the association fought a vigorous campaign against some paragraphs of the new public health law, which have been detrimental to the medical profession. The board of the association was consulted in the drafting of the new bill for the establishment of the medical chamber, which forms a milestone in regard to the status of physicians in Roumania. The medical chamber will include in its activities regulations concerning quackery and illegal medical practice.

The Regulation of Prostitution in Roumania

Until September, 1930, Roumania was an absolutely regulationalist country. The police, the majority of the medical profession and the public authorities have always been convinced of the excellence of the system. But the abolitionist movement in Roumania, ably led by Dr. Menacitide Wenert, Dr. Saveanu and Professor Moldoveanu, and supported by the Roumanian Council of Women and the medical women of Bucharest, have

carried on a vigorous propaganda against regulation for some time and have now succeeded in getting a provision inserted in the new law dealing with the control and treatment of venereal diseases, which abolishes the licensed houses throughout the country. Happily, Dr. Janescu, the chief medical officer of Bucharest, is an abolitionist and his influence will, it is hoped, ensure that the new act is carried out in spite of opposition from those who believe in the old system.

The following are the principal articles in the new Roumanian law which deal with venereal diseases, including article 305, which abolishes licensed houses. The article was issued, August 30, with the enactment that its paragraphs have to be executed immediately:

Article 202: Persons suffering from venereal diseases must submit to medical treatment. Medical institutions belonging to the state or to the municipal authorities or those receiving a grant from the state are obliged to give free medical consultations, and the treatment for venereal diseases imposed by law to poor people who are not treated by the societies for the prevention of venereal diseases. The official laboratories will make bacteriologic tests at the request of state physicians and make the necessary diagnosis free of charge. Parents and teachers must send their children or pupils to be examined if they have contracted venereal diseases.

Article 304: Persons who are found to be suffering from an infectious venereal disease must take precautions to avoid infecting other people. Persons breaking this law will come under the full penalties set forth in article 296 of the act, even without complaint from the person so infected.

Article 305: Licensed houses where women are interned, or establishments which are frequented by women for the purposes of prostitution, are absolutely forbidden. All establishments in this category are, from the moment the present law is passed, closed and abolished. Those who contravene this act or those who exploit women under any form whatever for purposes of prostitution will be punished by a fine of from 5,000 to 100,000 lei ($30 to $600) and in the case of a second offense by six months imprisonment.

Article 306: The antivenereal clinics set up by the sanitary authorities will be responsible for all measures taken against venereal diseases.

Roumania has thus taken the first step toward a complete abolitionist victory, the merit for this progress being that of the Roumanian Council of Women, Dr. Wenert and Dr. Janescu. But police control of prostitutes remains. It can be hoped that the Roumanian abolitionists will shortly realize, as the Lithuanians have done, that the abolition of the licensed house is not enough. Perhaps the excellent example given by the municipal authorities in Grenoble (Roumanians like to imitate French innovations) will encourage the Roumanians to sweep the entire regulation system out of their country in the near future.

Marriages

MORRIS H. GENKINS, Norristown, Pa., to DR. ALICE DOROTHY EDSTROM of Newark, N. J., Oct. 11, 1930.

WILLIAM MCMILLAN MCNAUGHER, Pittsburgh, to Miss Isabel Littell of Philadelphia, Oct. 23, 1930.

NICHOLAS VIGGIANO, New York, to Miss Gladys Elizabeth Earley of Bethlehem, Pa., recently.

DON S. CHALLED, Cedar Rapids, Iowa, to Miss Olga Miller of Norway, Nov. 6, 1930.

HERBERT H. FRITZ to Miss Margaret Peter, both of Bryn Mawr, Pa., Nov. 12, 1930.

THEODORE H. GASTEVER, Wilmette, Ill., to Miss Anna Heilig, Dec. 31, 1930.

ALBERT H. SPERLING to Miss Rose A. Frankel, both of Philadelphia, January 4.

SAMUEL BLINDER to Miss Sophie Brody, both of New York, Dec. 30, 1930.

Deaths

Charles Edward Ruth ✠ Des Moines, Iowa; State University of Iowa College of Medicine, Iowa City, 1883; past president of the Polk County Medical Society; member of the American College of Surgeons; professor of anatomy and clinical surgery, 1890-1904, and professor of surgery, 1904-1908, Keokuk Medical College; veteran of the Spanish-American and World wars; formerly chief surgeon to St. Joseph's Hospital, Keokuk; since 1911 on the staff of the Methodist Hospital; aged 69; died, Dec. 11, 1930, of carcinoma of the urinary bladder.

Charles G. Stockton ✠ Buffalo; University of Buffalo School of Medicine, 1878; emeritus professor of principles and practice of medicine and clinical medicine at his alma mater; past president of the Medical Society of the State of New York; member of the American Gastro-Enterological Association; on the staffs of the Buffalo General Hospital and the Buffalo City Hospital; author of "Diseases of the Stomach"; aged 77; died, January 5, of rupture of aneurism of the abdominal aorta and arteriosclerosis.

Whitefield Nelson Thompson ✠ Hartford, Conn.; Jefferson Medical College of Philadelphia, 1889; member of the American Psychiatric Association, New England Society of Psychiatry and the Association for Research in Nervous and Mental Diseases; past president of the Hartford County Medical Society; medical superintendent of the Hartford Retreat; aged 65; died, Dec. 11, 1930, of uremia, adenoma of the prostate, arteriosclerosis and chronic nephritis.

Henry Bixby Hemenway ✠ Springfield, Ill.; Chicago Medical College, 1881; for more than eleven years medical assistant in the division of vital statistics of the state department of public health, and formerly district health superintendent; author of "Healthful Womanhood and Childhood," "Legal Principles of Public Health Administration," "Essentials of Veterinary Law," and others; aged 74; died, January 1.

Harold Elmore Santee ✠ New York; Cornell University Medical College, New York, 1908; professor of clinical surgery at his alma mater; member of the American College of Surgeons; on the staffs of the Bellevue Hospital and the New York Polyclinic Hospital, New York, the North Country Community Hospital, Glen Cove, and the Mount Vernon (N. Y.) Hospital; aged 47; died, Dec. 26, 1930.

Charles Rayevsky ✠ Liberty, N. Y.; Bellevue Hospital Medical College, New York, 1896; president of the Sullivan County Medical Society; on the staffs of the Monticello (N. Y.) Hospital, the Maimonides Hospital, and the Workmen's Circle Sanatorium; aged 63; died, Dec. 21, 1930, in the New York Post Graduate Hospital, New York, of heart disease and carcinoma.

Paul McCullaugh Lowell, Washington, D. C.; Jefferson Medical College of Philadelphia, 1913; senior medical officer, food and drug administration, U. S. Department of Agriculture; served during the World War; for two years minister of the International Health Board in Siam; aged 44; died, January 3, in the Walter Reed Hospital, of pneumonia.

Pierce James Dunphy ✠ Boston; Tufts College Medical School, Boston, 1918; assistant in gynecology, Harvard University Medical School, and instructor in pediatrics at his alma mater; served during the World War; aged 39; on the staffs of the Boston City Hospital and St. Elizabeth's Hospital, where he died, January 4, of pneumonia.

Elmer T. Boyd ✠ Denver; Missouri Medical College, St. Louis, 1888; member of the American Academy of Ophthalmology and Otolaryngology; aged 67; formerly on the staff of St. Luke's Hospital, where he died, Nov. 24, 1930, of a perforated ulcer at the site of a gastro-enterostomy.

Claude Ellsworth Quinn, Terre Haute, Ind.; Indiana University School of Medicine, Indianapolis, 1909; member of the Indiana State Medical Association and the Radiological Society of North America; served during the World War; aged 49; died, January 2, of carcinoma of the stomach.

William A. Seimel, Brooklyn; Medical Department of the University of the City of New York, 1890; member of the Medical Society of the State of New York; on the staff of the Wyckoff Heights Hospital; aged 68; died suddenly, Dec. 30, 1930, of heart disease.

Daniel J. Ryan, Neenah, Wis.; Milwaukee Medical College, 1903; member of the State Medical Society of Wisconsin; past president of the Winnebago County Medical Society; aged 64;

V 96
1931

died, Dec. 24, 1930, in the Mercy Hospital, Oshkosh, of coronary occlusion.

Sylvester Morrill Sherman, Columbus, Ohio; Eclectic Medical Institute, Cincinnati, 1875; member of the Ohio State Medical Association; Civil War veteran; formerly member of the Ohio State Medical Board; aged 88; died, Dec. 26, 1930, of uremia.

Malcom Robert Graham, Sandwich, Ont., Canada; University of Toronto Faculty of Medicine, 1906; served during the World War; superintendent of the Essex County Sanatorium; aged 53; died suddenly, Dec. 25, 1930, of acute dilatation of the heart.

Ephraim Charles Hellstern, Hudson Heights, N. J.; Baltimore Medical College, 1904; member of the Medical Society of New Jersey; formerly member of the school board and bank president; aged 51; died suddenly, January 2, of heart disease.

John Richard Harding, Elmira, N. Y.; Syracuse University College of Medicine, 1893; member of the American Orthopsychiatric Association; on the staff of the New York State Reformatory; aged 62; died, January 1, of bronchopneumonia.

James Garfield Smalley, Arcadia, Fla.; Eclectic Medical Institute, Cincinnati, 1916; formerly a missionary; aged 48; died, Dec. 8, 1930, in the Florida Sanitarium and Hospital, Orlando, of chronic myocarditis, arteriosclerosis and nephritis.

Tennyson L. Deavor ✙ Syracuse, N. Y.; Syracuse University College of Medicine, 1897; member of the American College of Surgeons; surgeon in chief of the Onandaga General Hospital; aged 61; died, January 1, of cerebral hemorrhage.

John Jerome Ficke, Indianapolis; Indiana University School of Medicine, Indianapolis, 1926; member of the county sanitary board; aged 30; died, January 1, in St. Vincent's Hospital, of acute nephritis and infection of the submaxillary gland.

John Llewellyn Shaw, Manitowoc, Wis.; Barnes Medical College, St. Louis, 1893; American Medical College, St. Louis, 1897; member of the State Medical Society of Wisconsin; aged 61; died, Dec. 28, 1930, of cerebral hemorrhage.

Charles Rewerts ✙ Garden City, Kan.; University Medical College, Kansas City, 1911; past president of the Finney County Medical Society; physician to the Garden City Hospital; aged 49; died, Dec. 17, 1930, of cerebral hemorrhage.

Silas Schiller, Youngstown, Ohio; Eclectic Medical Institute, Cincinnati, 1870; past president of the Ohio State Medical Association and the Ohio State Board of Medical Examiners; aged 84; died, Dec. 23, 1930, of heart disease.

Edward Powell Riggs, Birmingham, Ala.; College of Physicians and Surgeons, Baltimore, 1881; member of the Medical Association of the the State of Alabama; aged 72; died, Dec. 19, 1930, of cerebral hemorrhage.

Grant Chaney, Portland, Ind.; Medical College of Ohio, Cincinnati, 1896; member of the Indiana State Medical Association; aged 65; died, Dec. 23, 1930, in the Strong Memorial Hospital, Rochester, N. Y., of heart disease.

Emory J. Marshall, Marshall, Mich.; Hahnemann Medical College and Hospital, Chicago, 1875; for many years member of the school board; at various times health officer; aged 77; died, Dec. 25, 1930, of aortic insufficiency.

Harry Martin Hoag, Mason City, Iowa; Jefferson Medical College of Philadelphia, 1894; member of the Iowa State Medical Society; aged 60; died, Dec. 24, 1930, in the Mercy Hospital, of streptococcus septicemia.

Maury Munnerlyn Stapler, Macon, Ga.; Tennessee Medical College, Knoxville, 1892; member of the Medical Association of Georgia; aged 61; died, Dec. 19, 1930, as the result of a cerebral hemorrhage.

Herbert S. Chase, Lexington, Ky.; Medical College of Ohio, Cincinnati, 1889; formerly head of the tuberculosis department of the U. S. Veterans' Bureau; aged 64; died, Dec. 26, 1930, of heart disease.

John Davis Dabney, Birmingham, Ala.; Washington University School of Medicine, Baltimore, 1872; veteran of the Civil and Spanish-American wars; aged 81; died, Dec. 25, 1930, of bronchopneumonia.

William Theodore Knoop, Providence, R. I.; Harvard University Medical School, Boston, 1906; aged 51; died, Dec. 7, 1930, in Wallum Lake, (R. I.) Hospital, of tuberculosis and mediastinal tumor.

Arnim Carl R. Ecke, Chicago; Rush Medical College, Chicago, 1903; member of the Illinois State Medical Society; aged 56; died, January 7, of chronic myocarditis, nephritis and arteriosclerosis.

Louis Fielding Tisinger, Eufaula, Ala. (licensed, Alabama, 1907); member of the Medical Association of the State of Alabama; aged 46; died, Dec. 29, 1930, in the Britt Infirmary, of influenza.

Walter Robert Thames, Hattiesburg, Miss.; Louisville (Ky.) Medical College, 1896; aged 60; died, Dec. 27, 1930, in the East Mississippi State Hospital, Meridian, of arteriosclerosis.

Harry Alexander Ware ✙ Chicago; Rush Medical College, Chicago, 1898; on the staff of the Illinois Masonic Hospital; aged 55; was killed, January 9, at Miami, Fla., in an aeroplane accident.

Robert Gordon Maclellan, Lunenburg, N. S., Canada; Dalhousie University Faculty of Medicine, Halifax, 1909; aged 48; died, Nov. 9, 1930, in the Victoria General Hospital, Halifax.

James Wyatte Tarrant, Lynchburg, S. C.; Medical College of the State of South Carolina, Charleston, 1901; aged 58; died, Dec. 30, 1930, in the Florence Infirmary, Florence, of heart disease.

Andrew E. Anderson, Minneapolis; Denver College of Medicine, 1886; an affiliate fellow; on the staff of the Swedish Hospital; aged 71; died, Dec. 11, 1930, of carcinoma of the pylorus.

Samuel Richard Arthur ✙ Woodbridge, Calif.; Medical Department of the University of California, 1899; aged 56; died, Nov. 27, 1930, of coronary occlusion and arteriosclerosis.

Jeptha Washington Aldridge, San Bernardino, Calif.; Cooper Medical College, San Francisco, 1884; aged 67; died, Nov. 28, 1930, of cardiac decompensation and chronic nephritis.

Edgar Dorman Thompson, Washington, D. C.; Long Island College Hospital, Brooklyn, 1896; aged 59; died, Dec. 8, 1930, in the U. S. Veterans' Hospital, of bronchopneumonia.

Thomas S. Whayne, Columbus, Ky.; Barnes Medical College, St. Louis, 1899; member of the Kentucky State Medical Association; aged 61; died, Dec. 16, 1930, of heart disease.

T. Lee Glover ✙ Eugene, Mo.; American Medical College, St. Louis, 1901; also a druggist; member of the school board; aged 52; died suddenly, Dec. 20, 1930, of angina pectoris.

Anna Cornelia Landman, Chicago; Jenner Medical College, Chicago, 1905; aged 56; died, Dec. 13, 1930, in the West Suburban Hospital, Oak Park, Ill., of carcinoma.

Sebastian Joseph Wimmer, Albany, N. Y.; Medical Department of Columbia College, New York, 1887; aged 68; was found dead, Dec. 1, 1930, of heart disease.

Samuel Winick, Richmond Hill, N. Y.; Cornell University Medical College, 1900; member of the board of health; aged 58; died, Dec. 9, 1930, of carcinoma of the stomach.

Albert S. Nicholson, Brooklyn; College of Physicians and Surgeons, Baltimore, 1880; aged 68; died, Dec. 15, 1930, of chronic myocarditis and arteriosclerosis.

Robert Preston Stair, Owen, Wis.; Northwestern University of School of Medicine, Chicago, 1897; aged 58; died, Nov. 27, 1930, of cerebral hemorrhage.

Edson Knox Caldwell, Oakland, Calif.; Medical College of Ohio, Cincinnati, 1883; aged 72; died, Nov. 5, 1930, of cerebral hemorrhage and endocarditis.

John L. Watkins, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1882; aged 69; died, Dec. 19, 1930, of uremia and chronic nephritis.

Charles Albert Schloer, Washington, D. C.; Maryland Medical College, Baltimore, 1913; aged 68; died, Nov. 28, 1930, of carcinoma of the urinary bladder.

Irving Angel Porges, Chicago; University of Illinois College of Medicine, Chicago, 1903; aged 48; died, Nov. 12, 1930, of chronic myocarditis and nephritis.

Broadus Webber Penn, Rome, Ga.; Atlanta College of Physicians and Surgeons, 1913; aged 40; died, Nov. 25, 1930, of a self-inflicted bullet wound.

Edward Francis Stace, Los Angeles; Illinois Medical College, Chicago, 1905; aged 60; died, Dec. 17, 1930, in New York, of pneumonia.

J. C. Pitchford, Shamrock, Okla. (licensed, Oklahoma, under the Act of 1908); aged 61; died, Nov. 14, 1930.

George Kester Sipe ✙ Detroit; Detroit College of Medicine, 1907; aged 61; died, Dec. 9, 1930, of pneumonia.

Daniel M. Ulery, San Diego, Calif.; Eclectic Medical Institute, Cincinnati, 1903; aged 48; died, Nov. 11, 1930.

Bureau of Investigation

PROF. PAUL C. BRAGG

A Food Faddist and Sexual Rejuvenator Debarred from the Mails

Paul C. Bragg of Los Angeles, California, is well named. He styles himself "Professor;" the "cripple who rebuilt himself" and "America's Foremost Lecturer, Teacher, and Writer on Scientific Living Principles." Under the heading, "Prof. Bragg's Distinguished Record," he admits that he:

". . . is President of the National Diet and Health Association of America, member of the Board of Examiners of the American Red Cross Life Saving Corps (Certificate granted and signed by the late President Woodrow Wilson), First Vice-President of the Columbia Academy of Applied Drugless Science, Honorary Dean of the Health Center Institute of Drugless Healing; holds special credentials from the New York and California Boards of Education, is National Physical Director of the Industrial Boys' League, and is on the board of advisors of other leading health societies."

If one is to believe Bragg's advertising—which is not advisable—he was at the age of twenty a "hopeless, helpless cripple" and was "given only thirty days to live." After trying

"BE YOUNG AT 70!"

Says Prof. Bragg:

"Old age is not a matter of years. It is the accumulation of toxins and waste products in the system that devitalize and age the tissues. When we learn how to cleanse the whole system—blood stream and tissues as well—by following Nature's laws in regard to our physical bodies, we can stave off old age many, many years. Anyone can be young at 70 by living more naturally."

□ □ □

Prof. Paul C. Bragg

nationally known health lecturer, writer, research worker and author of "Cure Yourself," brings to this work a most unusual and colorful background of experience. Many years of his life have been devoted to intensive clinical work and health research. He has delivered thousands of lectures throughout the country before leading educational institutions, international service clubs and civic organizations, and has dealt with countless numbers of sick people.

Prof. Bragg's Distinguished Record

The Professor is President of the National Diet and Health Association of America, member of the Board of Examiners of the American Red Cross Life Saving Corps (certificate granted and signed by the late President Woodrow Wilson), First Vice-President of the Columbia Academy of Applied Drugless Science, Honorary Dean of the Health Center Institute of Drugless Healing; holds special credentials from the New York and California Boards of Education, is National Physical Director of the Industrial Boys' League, and is on the board of advisors of other leading health societies.

Perhaps never again will you have the opportunity of personally hearing this great Health Specialist, so come early!

GREAT NEW MESSAGE OF

HEALTH

"How to Banish Disease, Live 100 Years"

By

PROF PAUL C. BRAGG

Internationally-Known Health Writer, Lecturer and Research Worker

Hear the man who has rebuilt thousands by Super-Brain Breathing and Natural Foods tell how he expects to live over 100 years. Learn how you can banish disease and outwit old age by following his simple new drugless methods.

FREE LECTURES

Under Auspices of the National Diet and Health Association of America

TRINITY CHURCH

18th and Broadway

May 20, 21, 22, 23, 24 and 26, 27

8:15 p. m.

Children Under 12 Not Admitted

Two pages of a four-page leaflet advertising Bragg's "Free lectures"—at which collections were taken—given at Trinity Church, Denver, Colo., in May, 1930.

every kind of treatment, he did some studying and "discovered how to banish disease and be healthy" and from a physical wreck, he "became a champion athlete."

Bragg's scheme is one that has become increasingly popular during the past few years with those who live by their wits. Ignoramuses or swindlers with a flair for public speaking, confer on themselves ornate titles, create paper organizations with high-sounding names, and give what are described as "free lectures," but which are, in fact, merely pieces of come-on advertising for books and nostrums they have for sale and especially for so-called classes, for which a round charge is made. Bragg, like most of the ilk, works particularly along two lines: Food fads and sex. These two subjects are always popular with the type of audience that will listen to charlatans of this type. In addition to creating himself a "Professor," Bragg calls from the vasty deep an alleged national organization and appoints himself president of it: "The National Diet and Health Association of America."

Occasionally, Bragg works on the ignorance or gullibility of preachers and gets them to permit him to use their churches for his so-called free lectures. Less than a year ago, Trinity Methodist Church of Denver opened its doors to this mountebank and advertised Bragg with a large banner describing him as "America's Foremost Lecturer." A report made by a physician of Bragg's talk, given May 20, 1930, at the Trinity Church, Denver, makes an interesting study. Two or three of the opening paragraphs of this report are worth quoting:

"Prof. Bragg was introduced to a crowded house by his Secretary-Business Manager-Advance Agent, Miss Betty Brownlee, who mentioned his last visit to this city [Denver] and the large number of letters they have received requesting his return. A showing of hands indicated that a goodly number of those present had heard Prof. Bragg before. They were requested to lead the applause and to let Prof. Bragg know how glad they were that he was back.

"As Prof. Bragg came on the platform with a leap and a bound, the audience began their applause. He immediately followed suit in an exaggerated fashion, saying: 'I like to hear people clap their hands. The clapping of hands vibrates the blood. If a person has a low rate of blood vibration, he is sick, prematurely old, nervous, etc., while a high rate of vibration indicates pep, enthusiasm, energy and good health. We sing to open up our lungs. Songs reaching away down in the diaphragm pep us up. That is why we sing at the beginning of a church service.' Prof. Bragg then sang, 'Holy, Holy, Holy,' in a loud voice and very much off key!

"With many gesticulations and much excess motion, Bragg goes on to state: 'I am a hundred years ahead of my time. I have a new message. No other man on the platform has the courage to tell the truth. The truth hurts.'"

Some of the further statements reported as having been made by Bragg during this talk are equally interesting. According to the report Bragg declared that the tonsils are spongy organs located in the throat and that tonsillitis is due to eating "mucus-forming foods" and the mucus so produced is caught by the spongy tonsils and they swell up; that cancer is caused by eating "gooey, slimy foods"; that tuberculosis is due to the fact that young girls smoke cigarets; that "colds" are caused by the eating of white bread or ice cream; that asthma, "gas on the stomach," "pink tooth brush," etc., are all caused by formations of mucus due to eating white bread!

About this time, says the report, the audience began to get a little restless and a few of the more intelligent began to leave, so the "Professor" decided to take up a collection. Following this important interruption, Bragg again turned his guns on white flour and white bread, and described his own 100 per cent bran bread that had revolutionized the baking industry!

At a subsequent lecture, the attractive Miss Brownlee, in again introducing the "Professor" told the audience that Bragg would have some classes after the free lecture which would cost $25 to each individual enrolling. At the end of this particular free lecture, Bragg complained that while there were fourteen hundred people in the audience the night before, the collection amounted to only $11.60, and he intimated that a silver offering would be more acceptable than applause. While girls were passing the collection boxes, Bragg explained that he had some books for sale—one, entitled "Cure Yourself," sold for $3; another, containing a thousand recipes, was $2.50, and as a closing plea, he urged all of the audience to buy some of his bread or books, or at least invest in his purgative, "Allax."

An examination of Bragg's book, "Cure Yourself," shows it to contain the usual farrago of platitudes and nonsense common to publications of this sort. In describing his treatment for constipation, he recommends senna leaves, because they are not drugs! He has the obsession common to food faddists regarding food combinations and states, "Do not eat fruit and starchy food together under any circumstances."

Next to white flour and white bread (for which Bragg has a substitute), his chief obsession seems to be against common salt, for which he also has a substitute. According to a book-

V 96
1931

let that Bragg puts out, under the trade name "Bragg Laboratories," salt is responsible for cancer, tuberculosis, rheumatism, high and low blood pressure, Bright's disease, gray hair and bald heads! In order that the American public may avoid this dangerous substance, the Bragg Laboratories have for sale "Prof. Bragg's Live Sprinkle"—price One Dollar. The booklet states that "Live Sprinkle" is "composed of the vitamin vegetables, blended and ground to a fine consistency, properly combined with enough sodium chloride to prevent your food from being tasteless." Apparently Bragg counts on the public being as ignorant as he seems to be of the fact that sodium chloride and table salt are one and the same thing.

In addition to his food-fad lectures, he also gives what he describes as a "one-night sex course," in which the class for women begins at 7:00 p. m. and the class for men at 8:30 p. m. He explains that this "course" is not part of his "body-building class" and there will be a separate admission fee, the price being $5, to be collected at the door on the night of the "course." The fact that he announces that "checks will not be accepted" indicates that he lacks the trustful nature that distinguishes his audiences.

As another of his activities, Bragg, unfortunately for himself, went into the mail-order business. The free-lecture and "classes" scheme together with the sale of worthless books and fantastically advertised food products, is a pretty safe game. So long as the general level of intelligence remains what it is and evangelical pastors open their churches to charlatans, systems like Bragg's are likely to remain profitable and safe. Using the mails to defraud, however, is another problem, and here is where Bragg made a tactical error.

Bragg has been selling on the mail-order plan a "patent medicine" that he calls "Glantex." Some of the claims made for Glantex are:

"No matter how old you are, or how weak and run down you are from abuses or other causes, Glantex never fails. It is used by men and women the world over."

"Glantex works wonders. It makes many feel twenty years younger."

"Glantex is potent and powerful."

"You will get a new supply of vim, vigor and vitality that you have not had for a long time after taking Glantex. You will be better appreciated by those who love you."

One month's supply of Glantex sold for $5 through the United States mails. In November, 1930, the postal authorities at Washington called on "Prof." Paul C. Bragg and his National Diet and Health Association of America, and his Bragg Laboratories, to show cause why a fraud order should not be issued against them. Bragg failed to show cause. The Hon. Horace J. Donnelly, Solicitor for the Post Office Department, in a memorandum to the Postmaster General dated December 27, 1930, briefly outlined the facts regarding Bragg. Mr. Donnelly stated that the National Diet and Health Association of America and the Bragg Laboratories were "owned and operated by Paul C. Bragg, self-styled 'Professor,' who is not a physician." The memorandum stated, further, that Bragg advertised in certain periodicals his various preparations and books, as well as his so-called course of treatment. Some of Bragg's advertisements dealing with Glantex were then quoted in detail. Mr. Donnelly's memorandum continues:

"Medical expert testimony before me shows that the use of 'Glantex' as directed by respondent will not and cannot enable any person, no matter how old or weak or run down from abuses or other causes, to build back youthful energy; neither will the use of this preparation enable persons of 80 or 90 years of age to get their glands in perfect condition and enjoy all the pleasures of youth and have the wonderful happy life of their early twenties and thirties; neither is 'Glantex,' when used as directed by respondent, capable of relieving painful menstruation. Respondent's representation, that the 'Glantex' furnished women is prepared from a formula differing from that intended for use by men, is untrue, as has been ascertained by chemical and microscopic tests and as has been admitted by respondent's manager. 'Glantex,' single, double, or triple strength, will not cure impotency in men, give permanent manly strength, nor cure getting up nights, foot and leg pains, sciatica, prostate gland trouble nor all sexual weaknesses, and its use in cases of chronic constipation will not prove of any therapeutic value."

It was further brought out in the memorandum that those who purchased Glantex, both men and women, received a circular-letter advising them to take cold sitz baths daily—whether the patient suffered from inflammation of the prostate or from painful menstruation! Solicitor Donnelly, in view of the facts, recommended that a fraud order be issued against the National Diet and Health Association of America, Bragg's Health Center, Bragg Laboratories, Professor Paul C. Bragg, and their officers and agents, as such. On December 30, 1930, Postmaster General Brown notified the local postmasters that they were forbidden to pay any postal money orders drawn to the order of Bragg's outfits, and were to return all letters and other mail matter addressed to Bragg and his concerns to the senders, with the word "Fraudulent" stamped on it.

This, of course, will not prevent Bragg's continuing his much more profitable schemes of "courses" and "lectures" in person, but that is not the fault of the federal authorities. State officials, could of course, prevent it. But the interest, if any, shown by prosecuting attorneys in schemes such as Bragg's is usually largely academic.

Correspondence

"IS A MEAT DIET A MENACE?"

To the Editor:—A recent issue of THE JOURNAL (December 6, p. 1762) contains a letter from C. Robert Moulton of the Institute of American Meat Packers, written "in defense of the editorial entitled 'Is a Meat Diet a Menace?' (THE JOURNAL, September 20, p. 866) and in reply to the criticism of Dr. Mark Falcon-Lesses (THE JOURNAL, November 8, p. 1445)."The editorial referred to states that a diet consisting solely of muscle tissue is admittedly harmful but that the tribes naturally adapted to a "meat regimen" include an abundance of tissue fats, bone marrow and various organs, in addition to muscle in their diet. The editorial then refers to recent experiments (*J. Biol. Chem.* **87**:651 [July] 1930) in which two arctic explorers lived for a year exclusively on "flesh foods" in imitation of the diet of the Eskimos. The protein intake varied from 100 to 140 Gm., and the fat from 200 to 300 Gm. This carnivorous diet, characterized by its high fat content, did not harm the kidneys of the two subjects.

Falcon-Lesses objects to the generalization implied by the wording of the editorial that meat diet will not injure the kidneys. He points out that the only justifiable conclusion to draw from the experience of the two arctic explorers is that a carnivorous diet containing about 110 Gm. protein daily caused no injury in one year. He asks what might happen if the diet were continued for a number of years or if a carnivorous diet not especially selected for its richness in fat were taken.

Moulton, in his "defense," objects to the diet fed their subject by Newburgh, Falcon-Lesses and Johnston because its 4,177 calories and 327 Gm. of protein make it "truly Gargantuan." Since the subject did not gain weight during the experiment, it would appear that the less poetic term "maintenance diet" would be more in accord with the facts. Moulton finds further fault with the experiment of Newburgh et al. because in the fore period the subject's urine contained casts, which "can logically be considered to indicate a mild existing kidney weakness." It seems impossible that Moulton could have made such a statement after reading the following passage from our paper (Newburgh, L. H.; Falcon-Lesses, Mark; and Johnston, Margaret W.: *Am. J. M. Sc.* **179**:305 [March] 1930):

Addis has shown that a few casts are usually present in the urine of normal persons and has emphasized the desirability of recording the number of casts voided in a unit of time as a criterion of the state of the kidneys. Three specimens were examined according to Addis's method. The cast counts were, respectively, 49, 48 and 52 per hour. Addis made 82 examinations of the urines from 74 medical students. No casts were seen in 29 instances. The highest count gave 356 casts per hour and the average for the whole series was 87 casts per hour.

Moulton further states that the earlier experiments carried out by Newburgh and his colleagues are without value since "high protein experiments with rabbits are worthless." In our

ignorance we would appreciate a reference to the evidence that permits Moulton to settle for all time the status of the rabbit in this field.

The representative of the Institute of American Meat Packers finally delivers the death blow to our work by pointing out that there are eleven reports denying the injurious effect of high protein diet on the kidneys of rats, whereas he finds only three papers in which it is alleged that such diets are harmful. Moulton has apparently again not troubled to read what we wrote in 1928 (Newburgh, L. H., and Curtis, A. C.: *Arch. Int. Med.* **42**:801 [Dec.] 1928) regarding this seeming disagreement, for we pointed out at that time that all the workers in this field had used the generic term "protein" too loosely; that when the protein of the diet was casein, rats were unharmed, but that when a similar amount of nitrogen was taken in the form of animal tissue, chronic nephritis developed. All of the investigators who failed to obtain injury from high protein diet had fed casein. In our opinion these facts emphasize the potentially harmful nature of diets high in meat.

L. H. NEWBURGH, M.D., Ann Arbor, Mich.

MAGGOTS IN THE TREATMENT OF WOUNDS, COMPOUND FRACTURES AND OSTEOMYELITIS

To the Editor:—May I at this time call your attention to the following references in the early literature on this subject, particularly now that Baer of Baltimore, Rechtman of Philadelphia, Taylor of Coatesville, Pa., and others are using maggots:

Larrey, D. J.: *Clinique chir.* **1**: 51 (Nov.) 1829, "des *vers* ou larves de la mouche bleue" (Chez Gabon, Paris).

Malgaigne, J. F.: Treatise on Fractures (and Luxations), under the heading of "Treatment of Complicated Fractures," Paris, 1847, vol. 1, p. 271, line 22, concerning maggots.

Packard, J. F.: Translation of Malgaigne's "Treatise on Fractures," Philadelphia, J. B. Lippincott Company, 1859, p. 221 (bottom).

The treatment with maggots, as can be seen from these references, is more than a hundred years old. I saw maggots used in the old Provincial General Hospital, Madrid, Spain, in August, 1929, while visiting there with the surgical resident, Dr. Frutos.

HYMAN I. GOLDSTEIN, M.D., Camden, N. J.

USE OF BCG IN PREVENTION OF TUBERCULOSIS

To the Editor:—I have read the letter which Professor Calmette sent you for publication and on which you ask me to comment (THE JOURNAL, January 3, p. 58).

I agree with Calmette as to the harmlessness of his culture when it is fed or injected into infants, and is kept as he directs. Dr. Kereszturi has under my general supervision been using the BCG vaccine throughout four years. During that time, more than 300 infants have been vaccinated and we have never observed the slightest harm to any who received the vaccine orally; and in those infants who received it subcutaneously, we observed nothing deleterious except a few small "cold abscesses," which in every case entirely healed.

Concerning Calmette's belief that by growing the BCG vaccine on special mediums Petroff does not cause a dissociation into two types of bacillus, one of which is practically avirulent and the other slightly virulent so that an injection of 1.5 mg. sometimes causes progressive tuberculosis in injected guinea-pigs, and Calmette's objection to this statement, I disagree. Knowing Petroff and having seen some of his results, I do not doubt that he has accomplished what he has published. I believe however, that no such results as his can occur when we insist on BCG stock culture being grown always in Calmette's potato bile broth. The very fact that in Lübeck the BCG culture sent by Calmette was continuously grown on egg mediums suggested that a change in medium may have caused a change in virulence. This suggestion, however, is shown to be incorrect by the report of Professor Neufeld for the German commission. It remains a fact, however, that care should be taken to grow the BCG vaccine in the way suggested and carried out by Calmette. Then we may be certain that no increase in virulence is possible.

We are encouraged by our results and are hoping as we vaccinate larger numbers of infants that we may have a more definite and better founded opinion as to the degree and duration of the resistance that follows vaccination.

WILLIAM H. PARK, M.D.,
Bureau of Laboratories,
Department of Health,
New York.

PHYSICIANS PROTECTIVE CASUALTY COMPANY

To the Editor:—I note you have an article in THE JOURNAL of December 20 about the Physicians Protective Casualty Company of Chicago. I have a policy with them (11357) and paid $94 for it. This policy took effect on Sept. 1, 1930. I had an accident since then and filed my claim in the regular way in the amount of $100. They have never acknowledged receipt of my claim, or even answered any of my letters. I have written them two or three times and asked why they did not do something with it, but have had no reply.

CLARENCE E. QUAIFE, M.D., Galesburg, Ill.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TREATMENT OF GONORRHEAL URETHRITIS

To the Editor:—I have been trying to cure a man of gonorrheal urethritis for the past eight months without any success. The patient was seen first eight months ago with acute anterior urethritis. He was put on strong silver protein, 0.5 per cent, twice daily at home and acriflavine hydrochloride, 1: 4,000, alternate days at the office. Following two months of this treatment there appeared to be a let up of the discharge for a few days, when suddenly the discharge appeared more profuse and continuous. The procedure was continued for about another month when he was changed over to mercurochrome-220 soluble, 0.5 per cent, at the office, and potassium permanganate irrigations following this. Whenever smears were taken, gonococci were always demonstrated. Astringents have been resorted to without any success. At present the patient uses strong silver protein, 0.5 per cent, twice daily at home and potassium permanganate irrigations at the office on alternate days. He is given prostatic massages once and sometimes twice weekly. The prostate and seminal vesicles show no signs of involvement. The result of the two-glass test during the entire eight months has been: first glass, shreds and slightly cloudy; second glass, clear. The patient has no urinary difficulties. He cooperates to the fullest extent. Would you regard this as a chronic posterior urethritis due to its long standing, regardless of noninvolvement of prostate and seminal vesicles and two-glass test? What would you advise for course of treatment? Please omit name.

M.D., Ohio.

ANSWER.—This patient presents signs which suggest the presence of infection in the prostate and seminal vesicles as well as persistent infection involving the glands of the urethra, the glands of Littré and the Morgagni crypts. Occasionally infection of the prostate and seminal vesicles occurs, with so transient a turbidity of the second glass of urine that this turbidity as evidence of posterior urethral involvement is not observed by the most careful physician. It would be advisable to examine the expressed prostatic and vesicular secretion after emptying the bladder and lavage of the urethra. This examination should include staining for the gonococcus, as well as a comparative count of the prostatic bodies and leukocytes. If the leukocyte count is higher than from 10 to 15 per cent of the total cells counted, it is indicative of prostatic involvement. The present treatment may be continued, but the urethra should now be dilated with sounds. Ordinarily one may start with a number 23 of the Charrière scale. The dilation should be slow, gradual and carried out with the utmost gentleness. Often it is possible to palpate over the sound the prominent

V 96
1931

inflamed urethral glands. If these are thus located, they may be massaged. Anterior endoscopy also will demonstrate these infected lacunae and a definite impression of the pathologic condition present may be gained. Silver nitrate in strength of 0.125 to 0.25 per cent may then be instilled into the urethra. It is suggested that the prostate and vesicles be massaged twice a week, and the dilations given on the day preceding the massages. The use of acriflavine hydrochloride and mercurochrome-220 soluble in gonorrhea has not proved of extraordinary value to most urologists, the various organic silver compounds seeming preferable.

POSSIBLE DIAGNOSIS OF MIGRAINE

To the Editor:—An unmarried white woman, aged 32, has been having "spells" for about two years. Her first symptom is a diminution of vision. This lasts for about one hour. Her vision returns, she becomes cold and a severe headache develops. She feels weak and is completely knocked out but is never unconscious. She never voids nor do her bowels move during a "spell." If she can rest in bed and can get some sleep she will feel better in about three hours. The next day she is weak but is able to work. When the "spells" first began she had them daily at 10 a. m., but after treatment from another doctor she got better. At present she is having them every one to two weeks, sometimes less frequently. The menses come every twenty-one to twenty-eight days and last from five to six days with profuse flow; there is no pain, but she aches all over. She works nine hours a day in a department store. She has never been very strong. She had an appendectomy ten years ago. Physical examination showed her weight to be 91¼ pounds (41 kg.), and her height to be 61 inches (155 cm.). She was very thin. The pupils reacted to light; the vision with glasses was 20/20; the fundi were negative. The nose and throat were normal; the heart and lungs also were normal. Blood pressure was 105 systolic and 75 diastolic; the pulse was 96; the temperature was normal. The abdomen showed an old McBurney scar; otherwise it was normal. The reflexes were negative. A blood count showed hemoglobin 75 per cent, red blood cells numbering 3,980,000 and white blood cells numbering 8,700. Urinalysis was negative. I would appreciate a diagnosis (secondary anemia from menorrhagia is obvious) if such is possible from the meager details I have given, also any suggestion as to treatment. Please omit name.

M.D., Virginia.

ANSWER.—The most probable diagnosis is migraine. Scintillating scotomas, hemianopia and other disturbances of vision are common prodromal symptoms and the headache with vomiting and various vasomotor disturbances are the usual phenomena. The etiology is not known and may be different in different cases. Treatment is therefore uncertain. Some cases seem to be of allergic origin and due to common foodstuffs such as wheat, milk or chocolate. It is worth while to eliminate various articles from the diet to determine whether avoidance of any particular form of food will produce effects. When the disability is not great, many patients prefer to put up with the attacks. In severe cases relief can sometimes be obtained through the use of cannabis, but this means continued use of the drug as it is palliative only. Relief in an attack can sometimes be secured through the use of acetylsalicylic acid or amidopyrine. Avoidance of excitement and careful general hygiene are important desiderata.

TREATMENT OF LEUKOPENIA — VITAMIN C

To the Editor:—I have a patient, a woman, aged 50, whose successive blood counts have been the following: June 25, erythrocytes, 2,928,000; leukocytes, 6,400, with 42.5 per cent lymphocytes; hemoglobin, 30 per cent. July 25, erythrocytes, 3,664,000; leukocytes, 4,800, with 41 per cent lymphocytes; hemoglobin, 35 per cent. August 25, erythrocytes, 4,288,000; leukocytes, 5,400, with 34 per cent lymphocytes; hemoglobin, 37 per cent. September 25, erythrocytes, 4,560,000; leukocytes, 4,800, with 47 per cent lymphocytes; hemoglobin, 60 per cent. During the last four months she has been treated regularly with liver extract, hydrochloric acid and citrate of iron. My attention is called to the low leukocyte count and the high percentage of lymphocytes. Kindly suggest what may be the cause (tuberculosis, cancer and malaria excluded) and advise further treatment. 2. Please inform me of the relative value in vitamin C of the following: lemon (*Citrus limonum*), lime (*Citrus medica*), sweet lemon (*Citrus lumia*) and sweet lime (*Citrus limetta*). Please omit my name.

M.D., Costa Rica.

ANSWER.—1. With the satisfactory exclusion of malaria and tuberculosis, the other common causes of leukopenia, viz., measles, mumps, influenza and typhoid, may be eliminated on the basis of the chronicity of the process. Splenic anemia, commonly associated with leukopenia, is ruled out in the absence of splenomegaly. The relative lymphocytosis directs one's attention to a possible hyperthyroid state. An aleukemic leukemia may be dismissed because of the relatively low percentage of lymphocytes. While secondary anemias are commonly associated with leukocytosis, they may, in the presence of debilitated and poorly nourished states, show a leukopenia with a relative lymphocytosis of the degree obtaining in this case. The need of considering the causes of such an anemia, more particularly a low grade chronic suppurative process, syphilis, chronic nephritis, chronic poisoning, e. g., lead, arsenic or phosphorus, and chronic hemorrhage, especially gastro-intestinal and uterine, becomes apparent and in this instance of paramount importance. The Minot-Murphy diet, with liver extract substituted for liver, in conjunction with two pills of ferrous carbonate three times daily has given good results in the treatment of the secondary anemias.

2. According to Ragnar Berg (Die Vitamine, Leipzig, S. Hirzel, 1927, p. 402) orange juice is richer than lime, and this than lemon. If the general proposition advanced that "the vitamin C content of fruits increases with sweetness" is correct, then the sweet lime and sweet lemon ought to be the richer ones in vitamin.

COMPLICATED TWIN PREGNANCY

To the Editor:—A multipara gave birth to a normal baby at 6 o'clock in the morning. At 10 a. m. she passed a mass that looked rather unusual. On examination I found it to be a dead fetus of about four months. It was flattened out but easily recognizable. The only explanation I can figure out is that she conceived after her pregnancy.

P. H. FLEMING, M.D., St. Martinville, La.

ANSWER.—The condition described is unusual but it has been observed frequently enough to remove it from the category of being a curiosity. The second fetus, which was only the size of a four months' fetus and flattened, is known as a fetus papyraceus or fetus compressus. The assumption that this fetus was the result of a conception which took place after the pregnancy of the live child began is most likely erroneous. The true state of affairs was almost certainly that there was a twin pregnancy from the start and that for some reason or other one fetus died. Instead of being expelled from the uterus the dead fetus remained, and as the live fetus grew the dead one lost most of its fluid content and was compressed by the normally growing ovum. This condition is described in most textbooks of obstetrics under the heading of fetus papyraceus or compressus. The twins in these cases are nearly always dichorionic or double ovum twins. A fetus papyraceus may also be found in the presence of triplets and in most of these instances two children are born alive and the third is a small compressed fetus.

ACIDOSIS IN FEVER

To the Editor:—Will you please give me your opinion on the following questions: 1. Is it advisable during a febrile disease, such as influenza and scarlet fever, to administer alkalis on the theory that with fever and reduced food intake there results at least some degree of acidosis? 2. Is acidosis occurring in such conditions serious enough to warrant the use of alkali when there are no symptoms, such as air hunger or stupor? 3. What, if any, are the advantages of the mixed alkalis, such as citrocarbonate (Upjohn) and Alka Zane (Warner) over sodium bicarbonate, if acidosis does exist? Please use initials only.

M.D., Vermont.

ANSWER.—1. Yes.

2. The acidosis is generally not sufficiently great to produce alarming symptoms; and the only justification for giving alkali in fever is the supposition that the acidosis may lessen the defense reaction.

3. They are possibly somewhat more pleasant. Sodium citrate in syrup of orange and water, equal parts, also is pleasant and as efficient, if given in sufficient dosage.

CIRCULATORY CHANGES WITH EDEMA IN THE ELDERLY

To the Editor:—A woman, aged 60, complained of pain and "caking" in the lower abdominal wall. Examination revealed swelling or hardening in the painful areas of the pendulous adipose tissues. In two days the same condition appeared in the adipose tissue under each breast and under the chin. The condition comes and goes, never entirely disappearing. The swelling under the chin has remained more solid and more sore than the other areas. There is no lymphadenitis. She has had a rise in blood pressure and some myocarditis for several years. The teeth and tonsils have been removed. The urine is normal. The gastro-intestinal tract is functioning normally. She leads an active life and outside of the slight soreness in these areas and the alarm she feels over the condition is as well as ever. Please omit name.

M.D., Ohio.

ANSWER.—The condition is seen not infrequently in elderly, adipose women with or without evidence of myocardial disease. In rare cases, myxedema and lymphangiectasis can account for the distribution of a "solid" edema of the neck, breasts and

abdomen. The etiologic factor in many cases is an obstruction to the return flow of venous blood arising as a result of kinking and narrowing of the vessel. As the fluid accumulates in the tissue spaces, pressure is exerted on the outside of the wall of the vein. This causes an aggravation of the already embarrassed local circulation. Diminished or absent muscular activity favors the stasis of blood. First, in the way of suggestions, a careful search for signs of myxedema and repeated basal metabolism determinations. With myxedema, thyroid substance is indicated. Reduction in the caloric intake, restriction of salt and water intake and administration of diuretics should be attempted. Elevation of the pendulous portions and maintenance by properly fitting supports will frequently help in the disappearance of these swellings.

ANTITOXINS AGAINST SCARLET FEVER

To the Editor:—What is the present status and accepted therapeutic value of ricinoleated antigens, especially the scarlet fever immunizing antigen or modified Gabritschewsky antigen? What is the most widely accepted method of immunizing against scarlet fever? Has any of the so-called one-shot methods been proved effective? M.D., Minnesota.

ANSWER.—No "one-shot" method of active immunization against scarlet fever has proved effective. This statement does not apply to the use of scarlet fever antitoxin given prophylactically for passive temporary protection.

The present status of the "ricinoleated antigens" is that they are of unestablished value. Their therapeutic action has not been proved. Scarlet fever ricinoleated antigen has been distributed by only one concern and that concern has recently discontinued the manufacture and distribution of ricinoleated antigen and is recalling it from the market.

The accepted method of active immunization against scarlet fever consists of five hypodermic injections of graduated doses of sterile scarlet fever toxin at intervals of one week, repetition of the skin test two weeks after the last dose, and injection of an extra dose if indicated by the result of the skin test.

TREATMENT OF EPIDERMOPHYTON INFECTION (ATHLETE'S FOOT)

To the Editor:—What is the treatment for athlete's foot? Please omit name. M.D., Connecticut.

ANSWER.—A severe acute vesicular attack is best treated with baths of potassium permanganate solution, 1:2,000, twice daily. The macerated and fissured type usually responds well to the salicylic and benzoic acid combination known as Whitfield's ointment. This consists of salicylic acid, 2 parts; benzoic acid, 4 parts, in enough petrolatum to make 30 parts. Discrete or grouped vesicles on the sole respond well to the application of 5 per cent chrysarobin in solution gutta percha N. F. IV.

USE OF DIPHTHERIA TOXOID

To the Editor:—Would you give me your opinion as to whether or not a child is properly immunized against diphtheria by the use of diphtheria toxoid, when the second dose, which should be given three weeks following the first dose, is postponed four or five days after three weeks has elapsed. Pleased use initials only. C. C. J., M.D., Vermont.

ANSWER.—The four or five days' delay in injecting the second dose of diphtheria toxoid would not affect the immunity obtained. One could not say that a child has been properly immunized against diphtheria until a negative Schick test is obtained.

TREATMENT OF SYPHILIS

To the Editor:—Should a patient who presents himself for the first time with a four plus blood Wassermann reaction and a negative spinal fluid, and shows no objective or subjective symptoms, receive antisyphilitic treatment? I have heard that such a patient may not benefit by treatment but, instead, this treatment may provoke symptoms which have heretofore been absent. Omit name, please. M.D., New York.

ANSWER.—First of all the blood Wassermann reaction should be carefully checked by other laboratories and by the Kahn reaction. False positives are not uncommon. Much depends on the history, the age of the patient and the physical observations. Careful history taking will usually disclose some incident that will aid in determining the date of infection. The future holds greater possibilities for damage to a young person than it does to an old one. Vascular and hepatic lesions should be treated cautiously with only mercury at first. Bone lesions respond much better to mercury than to the arsphenamines. In the presence of a nonspecific nephritis, arsphenamine rather than mercury or bismuth should be used.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, March 3, 1931. Sec., Dr. Harry C. De Vighne, Juneau, Alaska.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination in nineteen cities in the United States and Canada. March 14, 1931. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh, Pa.

CALIFORNIA: Los Angeles, Feb. 2-5, 1931. Sec., Dr. C. B. Pinkham, 420 State Office Bldg., Sacramento, Calif.

CONNECTICUT: New Haven, Feb. 14, 1931. Basic Science, State Board of Healing Arts, 1895 Yale Station, New Haven, Conn. Homeopathic, New Haven, March 10, 1931. Sec., Dr. E. C. M. Hall, 82 Grand Ave., New Haven, Conn.

NATIONAL BOARD: Parts I and II held in any class A medical school on Feb. 11-13, 1931. Dir., Mr. Everett S. Elwood, 225 South 15th St., Philadelphia, Pa.

NEW HAMPSHIRE: Concord, March 12-13, 1931. Sec., Dr. Charles Duncan, Concord, N. H.

NEW YORK: Albany, New York City, Syracuse and Buffalo, Jan. 26-29, 1931. Chief, Mr. H. J. Hamilton, Albany, N. Y.

OKLAHOMA: Oklahoma City, March 10-11, 1931. Sec., Dr. J. M. Byrum, Shawnee, Okla.

PORTO RICO: San Juan, March 3, 1931. Sec., Dr. Diego Biascoechea, Box 804, San Juan, P. R.

VERMONT: Burlington, Feb. 10-12, 1931. Sec., Dr. W. Scott Nay, Underhill, Vt.

WYOMING: Cheyenne, Feb. 2, 1931. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne, Wyo.

Oregon July Examination

Dr. C. J. McCusker, secretary of the Board of Medical Examiners of Oregon, reports the written examination held at Portland, July 1-3, 1930. The examination covered 11 subjects and included 106 questions. An average of 75 per cent was required to pass. Thirty-one candidates were examined, 29 of whom passed and 2 failed. The following colleges were represented:

College	Year Grad.	Per Cent
PASSED		
Harvard University Medical School	(1928) 86.2, (1929)	87
University of Michigan Medical School	(1930)	91
University of Oregon Medical School	(1929) 85, 85.5, 88.4, 89.8, (1930) 81.5, 83, 84, 84.2, 84.2, 84.3, 84.4, 84.5, 85.4, 85.8, 85.8, 86.2, 87.8, 88, 88.5, 88.8, 89	
Jefferson Medical College	(1925)	89.8
University of Manitoba Faculty of Medicine	(1926)	85.9
Osteopaths	82.2, 85,	87.7
FAILED		
Osteopaths	68.5,	72.4

West Virginia July Examination

Dr. W. T. Henshaw, secretary of the Public Health Council of West Virginia, reports the oral, written and practical examination held at Martinsburg, July 8-10, 1930. The examination covered 12 subjects and included 120 questions. An average of 80 per cent was required to pass. Sixteen candidates were examined and passed. The following colleges were represented:

College	Year Grad.	Per Cent
PASSED		
Emory University School of Medicine	(1928) 89.7, (1930)	87.6
Rush Medical College	(1930)	86.3
University of Maryland School of Medicine	(1930)	87.1
University and Bellevue Hospital Medical College	(1930) 90.5,	91.3
University of Cincinnati College of Medicine	(1930)	86.9
Jefferson Medical College	(1929) 84.5,	85.2
University of Tennessee College of Medicine	(1929)	83.6
Medical College of Virginia	(1929) 86, (1930) 85.6, 85.6,	86.6, 88
Queen's University Faculty of Medicine	(1926)	87.3

Dr. Henshaw also reports 10 physicians licensed through reciprocity with other states at the same meeting. The following colleges were represented:

College	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
Howard University School of Medicine	(1929)	Kansas
University of Louisville School of Medicine	(1912)	Kentucky
Johns Hopkins University School of Medicine	(1927)	Maryland
University of Maryland School of Medicine	(1922) (1928)	Dist. Colum. Maryland
Ohio State University College of Medicine	(1926)	Ohio
University of Pennsylvania School of Medicine	(1926)	Penna.
Medical College of Virginia	(1929-2)	Virginia
University of Virginia Department of Medicine	(1929)	Virginia

V 96
1931

Book Notices

A SYSTEM OF BACTERIOLOGY IN RELATION TO MEDICINE. Volume V. By W. Bulloch, S. L. Cummins, and others. Medical Research Council. Cloth. Price, £1 1s. net. Pp. 505. Volume VII. By C. H. Andrewes, J. A. Arkwright, and others. Medical Research Council. Cloth. Price, £1 1s. Pp. 509, with illustrations. London: His Majesty's Stationery Office, 1930.

These two latest volumes in the important system being prepared under the auspices of the Medical Research Council cover organisms that have had much attention in recent years. The chapters are quite as adequate as those on bacteria considered in the previous volumes. Thus, the section on diphtheria has excellent material on the serum treatment, the incidence and spread, the prevention, and the use of the Schick test as concerned in this disease. The literature is thoroughly reviewed and the literary references are adequate. There is discussion of the use of toxoid and of the use of toxin antitoxin, and brief mention of some of the unfortunate accidents that have occurred with the latter preparation when improperly prepared or administered. The section on tuberculosis is made up of the contributions of numerous writers who have specialized in various aspects of the subject. As might be expected, the chapter on the *Brucella* group is of especial interest, because of the large amount of work done recently on this subject. Strangely, it is stated that the vast majority of human infections are due to the ingestion of infected goat's milk or goat's milk products. The evidence as to the responsibility of the *Brucella* group for the production of undulant fever in man is carefully examined and it is taken for granted that the reason for the relatively low rate of infection is the low pathogenicity of the majority of strains with which men come in contact.

Volume VII is devoted to the filtrable viruses and to bacteriophage. In the preparation of the section on the viruses numerous special investigators have collaborated, such conditions being discussed as hoof and mouth disease, smallpox, encephalomyelitis, herpes, chickenpox, epidemic encephalitis, rabies, warts, measles and numerous conditions affecting animals. The claims of Caronia and of other investigators that measles is produced by green producing cocci is not held to be substantiated. Neither is it considered possible to evaluate scientifically, at this time, the work of Degkwitz. The section on bacteriophage constitutes less than a hundred pages and is credited to F. M. Burnet.

PLANT PHYSIOLOGICAL CHEMISTRY. By Rodney Beecher Harvey, Head of the Section of Plant Physiology, Division of Plant Physiology and Botany, Minnesota Agricultural Experiment Station. Cloth. Price, $6. Pp. 413, with 119 illustrations. New York: Century Company, 1930.

This treatise is a welcome addition to the sparse textbook literature in English on the physiologic chemistry of plants. As physiologic chemistry was some decades ago, plant physiology is the inheritor of information from many cognate fields. As physiologic chemistry adapted to the study of the chemical processes of the physiology of the human mechanism the information of the several related fields, so plant physiology is adapting such cognate knowledge to the study of the chemical phenomena in the realm of plants and is rapidly becoming an independent field of scientific discipline. To the English reading student the book will be welcome, for it now makes available in more than elementary form the many divisions of the subject between two covers, including the mechanism of the transformation of materials in plants, general metabolism, carbohydrates, fats, lipids and waxes, photosynthesis, and respiration. The subject is treated from the point of view of chemistry and there is much in the book, as one might expect, that may be found in textbooks on conventional physiologic chemistry. Hence, those scientists with medical interests who desire more detailed information of the special physiologic processes of the plant economy, such as photosynthesis, than is mentioned in the usual treatises on biochemistry, will find here much information of value. It is regrettable that such important subjects as the place of volatile oils and alkaloids in the plant economy are overlooked, but this may be accounted for somewhat by the lack of definite information on the subjects. Several typographic errors of chemical formulas have been noted, which will no doubt be corrected in future printings.

HISTORISCHE STUDIEN UND SKIZZEN ZU NATUR- UND HEILWISSENSCHAFT. FESTGABE GEORG STICKER, ORDENTLICHEM PROFESSOR DER MEDIZINGESCHICHTE ZU WÜRZBURG ZUM SIEBZIGSTEN GEBURTSTAGE DARGEBOTEN. Paper. Price, 15 marks. Pp. 152. Berlin: Julius Springer, 1930.

This volume is issued as a festschrift for the seventieth birthday of Prof. George Sticker, who is in charge of medical history in the faculty at Würzburg. It includes essays on many historical medical subjects, a bibliography of the writings of Professor Sticker and of his lectures, and a list of his courses. The essays cover many aspects of medical history from the earliest times through modern periods. Professor Sudhoff contributes an interesting paper on plague. There is also discussion of the writings of Paracelsus and of Albrecht Haller, and of the medical writings of such contributors as Lessing and Goethe.

DISEASES OF THE EAR. By Philip D. Kerrison, M.D., Consulting Aural Surgeon to the Manhattan Eye, Ear and Throat Hospital. Fourth edition. Cloth. Price, $7.50. Pp. 627, with 334 illustrations. Philadelphia: J. B. Lippincott Company, 1930.

This treatise, one of the best if not the best of its kind published in America, is profusely and clearly illustrated. The anatomic and physiologic discussions are accurate, detailed and satisfactory. The entire clinical treatment is characterized by a sane and conservative tone, and the author's critical consideration of questions is eminently fair and judicious. To the student, practitioner and specialist this work should continue to be a sound guide in practice and theory.

THE BELLEVUE HOSPITAL NOMENCLATURE OF DISEASES AND CONDITIONS. Department of Hospitals, City of New York. Revised by the Committee on Clinical Records. Approved by Dr. William Schroeder, Jr., Commissioner, 1929. Leather. Price, $3. Pp. 232. New York: Paul B. Hoeber, Inc., 1930.

The third edition of the Bellevue Hospital Nomenclature appeared in 1911 and was revised in 1922. The present edition provides some changes in classifications and adds several new conditions. Obviously, all scientific organizations should work toward the same nomenclature if statistics are to be of the fullest value.

A TEXT-BOOK OF PHYSIOLOGY FOR MEDICAL STUDENTS AND PHYSICIANS. By William H. Howell, Ph.D., M.D., Sc.D., Professor of Physiology in the School of Hygiene and Public Health, the Johns Hopkins University. Eleventh edition. Cloth. Price, $6.50. Pp. 1099, with 308 illustrations. Philadelphia: W. B. Saunders Company, 1930.

This book has gone through so many editions and is so widely used that a critical review of each new edition is hardly necessary or desirable. The author recognizes the tremendous growth of research in physiology. He has done his best to bring his book down to date, but he recognizes that there have been some new developments that may not be included. Dr. Howell realizes the difficulty of evaluating new theories and the necessity for avoiding too much discussion of this character in a textbook for students.

THE WILLIAM H. WELCH MEDICAL LIBRARY OF THE JOHNS HOPKINS UNIVERSITY. An Account of Its Origin and Development Together With a Description of the Building and an Account of the Exercises Held on the Occasion of the Dedication of the Library and the Inauguration of the Chair of the History of Medicine at the Johns Hopkins University, Baltimore, October 17 and 18, 1929. Cloth. Pp. 153, with illustrations. Baltimore: Williams & Wilkins Company, 1930.

This is a reprint from the *Bulletin of the Johns Hopkins Hospital*, giving a complete description of the Welch Library and a report of the dedicatory exercises, together with a conference on the history of medicine. The book is handsomely printed and bound, and forms a beautiful memento of a notable occasion.

JOHN MARSH, PIONEER: THE LIFE STORY OF A TRAIL-BLAZER ON SIX FRONTIERS. By George D. Lyman. Cloth. Price, $3.50. Pp. 394, with illustrations. New York: Charles Scribner's Sons, 1930.

John Marsh graduated from Harvard in 1823. He taught in Minnesota, became an Indian agent, traded furs and, without having studied medicine, practiced as a physician in Los Angeles in 1836. Later he became a cattle baron, helped to get California into the union, discovered gold and was finally murdered. Thus, he lived an exceedingly interesting life. Apparently, Marsh used chiefly brandy and quinine in his treatment. He also practiced obstetrics without too great a contribution to the

mortality rates. The medical interest of the book is slight, but as a contribution to early American records it is valuable. The author is a physician who has been especially interested in the history of California.

Medicolegal

Right of Employee to Refuse Operation

(Du Pont Rayon Co. v. Bryant (Tenn.), 24 S. W. (2d) 893)

In the course of his employment, Bryant cut his left hand, just below the thumb. His employer's physician treated him for several weeks. The wound healed, but Bryant did not recover the use of the thumb. He therefore consulted his own physician, Dr. Sumpter. Dr. Sumpter found that the tendon of the muscle flexing the last phalanx of the thumb, the flexor longus pollicis, had been severed. Dr. Sumpter's diagnosis was verified by a physician engaged by his employer. His employer thereupon requested Bryant to submit to an operation with a view to the restoration of the function of the thumb, but Bryant refused to do so. Presumably the employer thereupon discontinued payments to Bryant under the workmen's compensation act, undertaking to justify its course on the ground of Bryant's refusal to submit to an operation, for Bryant brought suit and obtained a judgment. His employer appealed to the Supreme Court of Tennessee.

Bryant's physician testified in the trial court that if the cut ends of the tendon had been sutured at the time of the original injury a satisfactory functional result should have followed. After the wound had healed and time had elapsed, he said, the retracted proximal end of the tendon might be difficult to locate or to return to its original position, either from the retraction of the muscle or from its atrophy incident to disuse. A transplantation operation on the distal portion of the severed tendon, he thought, would be unsatisfactory. Surgeons testified on behalf of the employer that an operation, to be successfully performed, would require an incision in the hand, several inches in length, to find the ends of the tendon, and that the longer the operation was postponed, the less was the chance of the restoration of the function of the thumb and the greater the risk of infection.

In compensation cases, said the court, quoting from its decision in *Glotfelter Erection Co.* v. *Smith*, 156 Tenn. 268, 300 S. W. 6, great latitude and discretion are vested in the trial courts. Their decrees will be reviewed only on questions of law. The reasonableness of a refusal to submit to an operation is, however, where there is any evidence to support an affirmative finding, a question of fact. The record in the case made it apparent that the employer's surgeon was either negligent or inefficient and that as a result of his ignorance the likelihood of a successful operation had decreased and the danger from an operation increased. Under such circumstances, the employer was in no position to insist on an operation. There was ample evidence to support the finding of the trial court that Bryant's thumb was permanently 75 per cent disabled. The judgment of the court below in his favor was affirmed.

Evidence: Testimony of Expert Based on Hospital Records not in Evidence.—The state industrial board awarded compensation to the widow of an employee who had died following the infection of a finger, crushed in the course of his employment. At the hearing before the board, two physicians testified. One, the attending physician, testified that the primary cause of death was pneumonia. The other, who had not seen the employee and who based his testimony solely on a hospital record and file, which were not in evidence, testified that the injury to the finger was the cause of death. The employer appealed to the Supreme Court of New York, Appellate Division, Third Department. Such opinion evidence as was given by the latter physician, said the court, is to be condemned, because it is not based on a definite set of facts and because it is based on medical records not in evidence. Since there was no other evidence in the record to sustain the finding of causal relation between the injury and death, the award was reversed.—*Harden v. Fahrenkopf & Reufle et al. (N. Y.), 240 N. Y. S. 645.*

Society Proceedings

COMING MEETINGS

American Orthopsychiatric Association, New York, February 20-21. Dr. George S. Stevenson, 370 Seventh Ave., New York, Secretary.
Pacific Coast Surgical Association, Victoria, British Columbia, February 27-28. Dr. E. L. Gilcreest, 384 Post Street, San Francisco, Secretary.
Southeastern Surgical Congress, Atlanta, Ga., March 9-10. Dr. B. T. Beasley, 45 Edgewood Ave., Atlanta, Ga., Secretary.

SOUTHERN SURGICAL ASSOCIATION

Forty-Third Annual Session, held at Lexington, Ky., Dec. 9-11, 1930

The President, DR. JAMES M. MASON, Birmingham, Ala., in the Chair

Exploratory Laparotomy

DR. E. P. HOGAN, Birmingham, Ala.: Exploratory laparotomy in certain cases with definite indications is a necessary operative procedure. Among these are penetrating gunshot injuries, and all other penetrating injuries of the abdomen; certain cases of traumatic abdominal injury in which there is definite evidence of serious intra-abdominal injury, such as hemorrhage, and perforation of abdominal viscera, solid or hollow. The most reliable diagnostic sign in cases in which operation should be performed is early pronounced and possibly boardlike rigidity of the abdominal muscles. It is indicated in acute cases in which it is impossible to make a differential diagnosis. If the operation is absolutely indicated, the timely period for the operation should not be delayed for the purpose of making a preoperative differential diagnosis. It is indicated in subacute and chronic cases only after the most thorough study in which a definite differential diagnosis cannot be made and yet it is certain or highly probable that there is an intra-abdominal cause—benign or malignant—which is or possibly may be amenable to or ameliorated by surgery. It may be indicated in cases with correct preoperative diagnosis for the purpose of determining the extent of the operation that is best suited for the relief of the condition. It should be substituted for abdominal aspirating, tapping and paracentesis. It offers possibility for correct diagnosis, and at the same time an operation which may cure or ameliorate the condition of the patient. Even in malignant conditions, early operation offers possibility of cure.

Stenosis of Duodenum from Compression of Preduodenal Vessels

DR. JOHN S. HELMS, Tampa, Fla.: The condition found in the case reported appears to have been caused by a congenital abnormality connected with a faulty rotation of the midgut, evidenced by a position of the cecum immediately underneath the umbilicus, the ascending colon abnormally fixed in an oblique transverse curved direction up to the hepatic flexure, and 180 degree volvulus of the entire small intestine. The small intestine was placed in a position of normal rotation, correcting the 180 degree ileojejunal volvulus. A submesocolic duodenojejunostomy to the right of the superior mesenteric artery was done. The patient was immediately relieved of all symptoms, gained 40 pounds (18 Kg.) in ten weeks, and has remained well up to this time, more than one year following operation.

Radium and Surgery in Cancer of Breast

DR. JOHN T. MOORE, Houston, Texas: When the growth was not definitely cancerous I have sometimes used an incision proposed by Warren in which he went below the breast and removed the growth; if the growth was found benign, the breast was not sacrificed. This incision on the under surface of the breast is far less conspicuous and more esthetic and preferable when dealing with a benign lump. If the growth is definitely malignant, the radical operation is performed, the breast, axillary glands, areolar tissue and pectoral fascia being removed *en masse*. If the growth definitely involves the fascia as evidenced by the immovability of the mass and fixation to the pectoralis major beneath, the pectoral muscles are sacrificed along with the fascia covering the upper portion of the rectus. I have not found it necessary as a routine to sacrifice

V 96
1931

the pectoralis muscles, nor have I cared to remove them as I think it definitely proved that dissemination takes place through the fascial covering of the muscles. I have never seen the muscles involved by cancer except by direct extension, though there are some who claim to have found the muscle involved. I believe that the fascia is the structure involved primarily and then the muscle secondarily by continuity. Moreover, I feel quite certain that with my plan of irradiation all cancer cells will be destroyed by the radium. The presence of the muscle is of some advantage, though not absolutely essential, as a protection to the ribs when radium is so used. I think it well to clean the muscles meticulously of fascia, remove them if involved and then rely on the radium to care for such cancer cells as may be beyond the reach of the scalpel.

Tumors of the Carotid Body

DRS. WILLIAM L. A. WELLBROOK and FRED W. RANKIN, Rochester, Minn.: Tumors of the carotid body may give rise to few symptoms and yet demand formidable surgical procedures for their eradication. Our interest was stimulated by the occurrence of a case in which tumor of the carotid body was bilateral and in which operation was performed successfully. So far as we have been able to ascertain, this is the only case of bilateral tumor of the carotid body, reported in the literature, in which the tumors appeared simultaneously. The diagnosis is rarely made preoperatively. Only when the tumor is uncovered and microscopic examination confirms the suspicion that there is a tumor at the bifurcation of the carotid artery is this rare entity identified. The magnitude of the surgical procedure for removal of tumors of the carotid body is influenced, in the main, by the necessity of ligation of one, two or three carotid vessels. In a series of twelve cases reviewed by us it was necessary to ligate the common carotid artery in three, and all these patients succumbed in the first forty-eight hours. Of the nine patients who survived the operation, seven are living and well. In eleven cases, five tumors were found to be malignant and six benign at the time of operation. In the case in which the tumors were bilateral, that of the left side was malignant and that of the right benign.

Results of Surgical Treatment of Pulmonary Tuberculosis

DR. FRANK K. BOLAND, Atlanta, Ga.: While the treatment of pulmonary tuberculosis by surgical collapse still leaves much to be desired, the results have been encouraging, especially when the class of patients under treatment is considered. The average mortality rate following thoracoplasty will be much lowered with better selection of cases for operation and with improved technic. The greatest advance in the therapy of pulmonary tuberculosis will be brought about by the application of some form of surgical collapse earlier in the disease.

What Can the Southern Surgical Association Do to Improve the Treatment of Fractures?

DR. CHARLES L. SCUDDER, Boston: Surgical opinion cannot make itself effective except by the help of an institution to give that opinion authority and backing. The American College of Surgeons, recognizing the need for improvement in the treatment of fractures, formed a fracture committee. This committee has already accomplished much in educational ways. It is my belief that if the Southern Surgical Association should appoint a small committee to cooperate with the college committee it would be doing a constructive piece of work. The fracture committee has some twenty-five regional committees in different states. There should be regional groups in every state in the South. The fracture committee hopes to accomplish this. The existing regional groups are actively at work in their own hospitals and in their respective communities, cleaning house and stimulating healthy modern ideas about fractures. These clinical groups are interested in maintaining suitable hospital treatment and in getting information concerning fractures to the country practitioner. Such a committee from your association would assist the general fracture committee in deciding where such regional groups should be organized in the South and in choosing the local personnel. Such a committee would support the moves for adequate records in hospitals, for encouraging young surgeons to become industrial surgeons, for a fracture service or its equivalent in hospitals, for assembling clinical material, for the teaching of graduates, and for improving undergraduate medical instruction.

Therapeutic Paravertebral Alcohol Block

DR. F. G. DUBOSE, Selma, Ala.: For the relief of pain, especially in inoperable conditions, paravertebral alcohol block is most valuable. In the vascular disturbance of the lower extremities, especially of the type culminating in gangrene, it has been established as a valuable therapeutic procedure. In asthma it has afforded consistent freedom from asthmatic attacks in every instance. There is evidence of improved circulation in the heart muscle following its use in angina. There is a corollary or complementary effect following the blocking of one or more segments of the rami communicantes on other glands and structures. It is certain that we can inhibit some secretions by the use of alcohol block of the rami controlling the innervation of certain glands or organs. Since anacidity of the stomach is desired in the treatment of gastric ulcer, it should be possible to produce such a condition by paravertebral block. One of the most important results of blocking we have observed is in cachectic states. In practically every instance there has been a disappearance of the cachexia, especially noteworthy in restoration of healthy color.

Release of Pericardial Adhesions

DR. HUGH H. TROUT, Roanoke, Va.: Congenital defects of the pericardium have been found in sixty-four cases without having the history of any symptoms attributable to such defects. Adherent pericarditis is found in about 4 per cent of routine necropsies. "Acute rheumatic fever" of childhood is the chief etiologic factor, though tuberculosis and other organisms are frequently found to be the cause. The condition is far more frequent than it is usually considered. The diagnosis is extremely difficult; a careful history, physical examination, roentgenograms and electrocardiographic study are of great aid. The results of operations justify the plea for more frequent resort to surgery in spite of the difficulty of diagnosis. Avulsion of the left phrenic nerve is advocated to supplement the Brauer operation, when the trouble is shown to be due also to adhesions between the pericardium and the diaphragm. In one case the Delorme operation was done with death of the patient on the seventh day.

Causes of Unsatisfactory Results in Surgical Treatment of Peptic Ulcer

DR. DONALD C. BALFOUR, Rochester, Minn.: The success of surgical treatment of peptic ulcer depends primarily on the type of patient, the operation selected, the proper performance of the operation, and intelligent after-care. When operation in spite of such practice is followed by disappointing results, I believe that the rarity of such failures establishes the principles of treatment and that increased experience will further reduce the incidence of such failures, few as they are.

Status of Surgery for Peptic Ulcer

DR. URBAN MAES, New Orleans: The medical treatment of peptic ulcers has a definite field, but the results are not permanent in the majority of cases; dietary and other restrictions must be rigorously observed; there is an inescapable element of risk, and the correction of coincident intra-abdominal lesions is not possible by it. Surgical treatment must show, to justify its added risk, end-results at least as good as those of medicine, if not better ones. Gastro-enterostomy gives excellent results for duodenal ulcer and only slightly less good results for gastric ulcer. It is abused and it has its percentage of failures, but these facts are no warrant for the routine performance of the difficult and dangerous operation of gastrectomy for all peptic ulcers. Gastrectomy, even in the most skilful hands, has a higher mortality than gastro-enterostomy, and an equal percentage of subsequent marginal ulcers.

Neurogenic Origin of Peptic Ulcer

DR. W. B. RUSS, San Antonio, Texas: The results of successful surgical, as well as successful medical, treatment of peptic ulcer bear out the theory of the nervous origin of the disease. In treating ulcer, both the surgeon and the internist

proceed on the theory that hypersecretion, hypermotility and spasticity of the pylorus, which prevents the duodenal contents from flowing back into the stomach, must be overcome. The patient must be encouraged to adopt a hopeful and cooperative spirit. In dealing with peptic ulcer one must treat the patient rather than the disease. The personality of the physician, whether surgeon or internist, quite often has more to do with the recovery of the patient than any measures that he may adopt. Failure to recognize the neurogenic origin of ulcer and to stress the importance of having the patient develop a philosophy of life that permits him to be serene and happy is responsible for most of the recurrences and for many failures.

Carcinoma of Colon and Rectum

DR. DANIEL F. JONES, Boston: No one should attempt the more extensive operations until he has familiarized himself with the less severe operations. It is far better to do a colostomy and an amputation by the posterior route than to do nothing but a colostomy. To do nothing but a colostomy is frequently discouraging to patients, for they do not get the relief they expect and it is discouraging to the physicians who send the patients. The physician and the surgeon have little to justify them when they refuse to operate because a colostomy is necessary. A colostomy with removal of the growth can be tolerated by any patient. A colostomy without removal of the growth may give relief, but rarely so much as with removal of the growth. Colostomy and posterior excision is the operation of choice for those surgeons who lack experience in selecting proper cases for the more extensive operation. The more experienced the surgeon, the more often he should resort to the combined abdominoperineal operation.

Operations on the Common Bile Duct

DR. HENRY W. CAVE, New York: In all operations on the gallbladder, whether stones are or are not present, meticulous care should be taken in visualization of the ducts, the position, size and thickness of the walls should be noted and careful palpation of the lower end of the common duct should be carried out. Should the presence of a stone be suspected, transduodenal exploration should be utilized.

Uretero-Intestinal Anastomosis

DR. H. DAWSON FURNISS, New York: The modifications that are the basis of this paper are: the insurance of a good blood supply to the ureter by retaining a portion of the attached peritoneum and the periureteral sheath; a simplified and more efficient method of cleansing the bowel; the use of the sigmoidoscope on which to make the incision of the intestine to the mucosa; the introduction of the ureter into the intestine by means of a trocar, and the metal cone that fits over the end of the ureter at the point where it is tied to the catheter. These modifications enable one to do the operation in less time, more aspetically, with greater care, and with more safety than by the original technic of Coffey. As far as immediate results are concerned, the operation may be performed with a fair degree of safety; the final results are not as yet satisfactory enough to encourage one to use it except in cases of malignant growths, inoperable fistulas and ulcerative cystitis of severe degree in which the suffering is so great that the risk is worth while.

Litholapaxy

DR. JOHN R. CAULK, St. Louis: In a series of 225 cases of stone in the bladder, 196 operations were performed: 112 by litholapaxy and 84 by the suprapubic route. An obstructive uropathy was found in 55.8 per cent of all cases associated with stone, and other associated conditions in proportionate frequency. Only 25 per cent of the patients had a previous history or were found to have renal calculi. Several conditions generally regarded as contraindicating litholapaxy, such as prostatic hypertrophy, carcinoma of the prostate, diverticulum of the bladder, and chronic cystitis, can be mitigated by appropriate means. I advocate the use of the cautery punch for obstructive conditions at the vesical neck, and in the case of the carcinomatous prostate its combination with radium and high voltage roentgen therapy in preference to open surgery. Neither the size nor the multiplicity of the stones offers any contraindication to the performance of litholapaxy, although multiple operations were required in about one third of the cases. When removal has been incomplete, I use the indwelling catheter in order to obviate impaction of the remaining fragments in the urethra. The routine installation of Bulgarian bacilli into the bladder following litholapaxy is very helpful when the evacuation has been incomplete.

Retrograde Removal of Ureteral Calculi

DR. CHARLES H. WATT, Thomasville, Ga.: The method is simple, though it cannot be carried out in every case because it is not always possible to dislodge a stone from its bed. Through an operating cystoscope a number 4 or 5 F. catheter is passed up the ureter and efforts are made to force it by the stone; if they are successful, the patient is then placed in the Trendelenburg position and the ureter above the stone distended with sterile water. The catheter is then removed and a number 8 or 9 silk bougie is substituted. This usually stops when it reaches the calculus, which can often be dislodged by manipulation of the bougie. If it is impossible to get the smallest catheter beyond the stone, the efforts to dislodge the stone must be carried out with the bougie alone. Once dislodged, aided by gravity, the distended ureter and the persistent urging of the bougie, the stone will usually drift toward the kidney. Once in the upper ureter, the stone can be held there the necessary length of time by substituting again a large catheter for the bougie. This serves to hold the stone in place as well as to drain the kidney. Operation may be performed at once or delayed from twelve to twenty-four hours, depending on existing conditions. If delayed from twelve to twenty-four hours, a roentgenogram should be made just prior to operation to determine the exact location of the stone. I advocate the use of this procedure before resorting to the difficult operation for the removal of a calculus from the lower ureter. Such efforts will be crowned with success in a goodly number of cases, though not in all.

Plastic Operations for Anal Sphincter Incontinence

DR. HARVEY B. STONE, Baltimore: The desire to reduce the probability of infection, in a field where strict aseptic postoperative conditions are well-nigh impossible, has led to the modification of the usually employed operation in some details. The principle of the operation is that of Wreden. The method differs from his by reducing the number of incisions from four to two and moving these two farther from the anal orifice. The mechanics of the operation remain the same, but the chance of escaping wound infection is improved.

Pulsating Exophthalmos the Result of Injury

DRS. LLOYD NOLAND and ADRIAN S. TAYLOR, Birmingham, Ala.: In three cases of arteriovenous communication, most likely between the internal carotid artery and the cavernous sinus, two followed simple fracture of the base of the skull. Expectant treatment in these cases resulted in loss of vision in one eye and impairment in vision in the other, with marked invalidism in both cases. The fistulas have remained patent in one case eight years, in the other, two years. The patient subjected to operation suffered a smashing, compound fracture of the orbit and base of the skull from a heavy bullet. Ligation of the common and internal carotid arteries, and of the supra-orbital vessels with enucleation of the eye, has resulted in a more complete restoration to health than in the other two cases, with the complete preservation of the vision of the opposite eye. The bruit can no longer be heard, and, of the subjective roaring, only a high pitched, constant tinnitus remains. In this case there has probably been a slow but complete obliteration of the fistula between the artery and the venous sinus following ligation of the principal arterial supply and of at least a part of the venous outlet of the so-called aneurysm.

Carcinoma of Cervical Stump Following Subtotal Hysterectomy

DRS. CHARLES H. MAYO and CHARLES MAYO II, Rochester, Minn.: Of our group of ninety-nine cases it was advisable to operate for the carcinoma in nineteen; in seven of these, hysterectomy had been performed in the clinic and in twelve it had been performed elsewhere. Radium was used in eighty-four cases and treatment by roentgen rays in seventy-eight cases. Masson has shown that it is possible to perform total hysterec-

V 96
1931

tomy with mortality as low as or lower than that following subtotal operations; he now performs the subtotal operation in less than 10 per cent of the cases. When subtotal hysterectomy is the procedure of choice, it is well to adopt, when possible, the added technic of cupping out the cervix, particularly if the women have borne children or if there is any suspicion that foci of infection are present. It must be remembered that the degenerating, nonresistant cervix will quite possibly become a chronic focus of infection, with its results manifest at some distant point as apparently a new disease, the tissue at any time itself becoming malignant.

Thrombosis of Femoral Artery After Operations for Abdominal Suppurations

DR. CARRINGTON WILLIAMS, Richmond, Va.: It is suggested that when a patient has marked arteriosclerosis and is operated on for a suppurative condition, measures be taken to support the circulation. These measures should include stimulating drugs, intravenous injections, external heat, and such exercise as can be given. Finally, if thrombosis does occur, operation should be done early above the thrombus without waiting for a line of demarcation.

Ligation of Abdominal Aorta for Aneurysm of Common Iliac Artery

DR. PAUL LAROQUE, Richmond, Va.: There are now on record eleven cases of complete and partial occlusion of the abdominal aorta in which the patients survived the operation long enough for the effect on the disease to be noted. I add two cases. Of these there were seven cases of complete occlusion by ligatures of silk or cotton, and six of incomplete occlusion, five by aluminum bands, one by cotton tape. In eleven cases, necropsies have been performed within from thirty-nine days to twenty-five months following operation.

Simple Inflammatory Lesions of Cecum

DR. W. A. BRYAN, Nashville, Tenn.: There is definitely such a thing as inflammatory pseudotumor of the cecum as well as of other parts of the colon and of other structures in the abdomen. There are other causes of pain in the right iliac fossa besides appendicitis and stricture of the ureter, and they would be found if care were only taken to discover them. When other causes are responsible appendectomy not only does not cure but, as Nemilov suggests, may make matters worse. The same may be said of suspension of the kidney. Inflammatory tumors are much more frequent than cursory study of the literature would indicate, and few if any cases diagnosed as cancer of the cecum should be refused the privilege of a laparotomy.

Chronic Appendicitis

DR. ROY D. MCCLURE, Detroit: There is marked sentiment against the difficult clinical diagnosis of chronic appendicitis even though pathologists diagnose as chronic appendicitis 85 per cent or more of appendixes removed during the course of other operations. The finding of a chronically changed appendix in such a large percentage of cases coexisting with cholecystitis and ulcers around the pylorus, in view of the close association with the lymphatic drainage from the appendix, is suggestive of a possible etiology in certain cases. Causes of the increased rate of appendicitis in this country may be attributable, perhaps, to type of food, bowel habits, nervous tension and worry interfering with normal peristalsis, as well as to increased infections of the upper respiratory tract. The majority of patients with attacks of appendicitis showing mild symptoms probably never consult a physician and in many cases in which the patient is seen by the physician the signs are so slight that the diagnosis is not made.

Retroperitoneal Tumors

DR. ISIDORE COHN, New Orleans: Retroperitoneal masses may be present and yet remain undetectable during life by any diagnostic methods now available. Retroperitoneal tumors sometimes move with respiration, thus making it difficult, if the mass is on the left side, to eliminate splenomegaly. The symptoms caused by a retroperitoneal growth are dependent on the location of the growth. Proximity to the celiac plexus causes digestive phenomena, whereas growths even of larger size in other locations may not cause digestive disturbances. Digestive disturbances are not diagnostic as they are present in so many conditions other than retroperitoneal tumors. Anemia is present in many cases but is not to be relied on as a diagnostic phenomenon. Edema of the extremities and ascites are present when the growth is large and when it is so situated as to interfere with the venous return. A growth situated on the right side readily produces edema, whereas a large growth on the left side may not be associated with edema of the lower extremities, or ascites. Retroperitoneal masses may be associated with chylous ascites and chylous pleural effusions. Retroperitoneal sarcomas may be primary and productive of metastases; other retroperitoneal sarcomas may be secondary growths. Some retroperitoneal masses present the clinical picture of an infection, and the autopsy reveals for the first time that the patient had Hodgkin's disease. Teratoma of the testicle must not be overlooked as a possible source.

Traumatic Surgery

DR. GEORGE J. HEUER, Cincinnati: A general survey of a large series of cases shows that the automobile was responsible for 29 per cent of all the injuries, ordinary accidents and industrial accidents for 33.4 per cent, and criminal attacks, fights and so on for 17.3 per cent. These percentages would all be increased if more accurate data in the 1,380 cases listed under "not stated" had been obtained. While the number of industrial accidents is not specifically stated, it was less than that of the ordinary accidents, such as falls. The 6,852 injuries caused 1,041 deaths and 138,184 days (378.5 years) of hospital disability. This disability is but a fraction of the total disability caused by these injuries; but the figures as they stand are sufficient to show the tremendous economic loss and suffering to a community from largely preventable accidents. Of the 1,041 deaths in this series, 385, or 37 per cent, occurred within six hours of admission to the hospital and over 50 per cent of all the deaths occurred within the first twenty-four hours of admission to the hospital. This mortality corresponds with the mortality on the field and at the first aid posts in war. The question arises whether in civil life these deaths shall be accepted as inevitable or whether measures shall be adopted which may diminish them.

Apathetic Thyroidism

DR. FRANK H. LAHEY, Boston: All patients with unexplained loss of weight, unexplained tachycardia and unexplained myesthesia, regardless of the absence of any of the typical signs of hyperthyroidism, should be submitted to careful clinical investigation and careful metabolic studies as to the presence of a possible apathetic type of thyroidism. I feel sure from my own experience that these patients, submitted to subtotal thyroidectomy, will be restored to health and relatively normal capacity. Practically all patients with the apathetic type of thyroidism should have right subtotal thyroidectomy, return home for six weeks, and then return for left subtotal thyroidectomy, with a few exceptions. The exceptions to this rule are for the most part patients in whom the disease has not existed for a long time or there has either been no loss of weight or the lost weight has recently been regained.

Acute Osteomyelitis of Head and Neck of Femur

DR. K. H. AYNESWORTH, Waco, Texas: The diagnosis must be made very early in the course of the disease. Otherwise, destructive processes will occur that will inevitably progress to destruction of bone and probably the joint. The x-rays are useless in the early stages of the disease but should always be used if there should be a history of trauma; also, they are necessary for showing an accurate line of the femoral neck when operation is performed. The operation that I propose is an old but little used procedure. The first mention of it is by Macnamara of Dublin. It was carried out by exposing the great trochanter through a vertical incision, centered just below the base of the trochanter exposing the bone quite well. Then, a fairly large drill hole was made up through the shaft to the upper end of the neck and then, if needed, to the head of the femur. A simple drain was used. The success of the operation depends on the accuracy of the drill hole passing up the center of the neck. If pus does not well out, as it always does when the inflammatory focus is penetrated by the drill, the direction

of the bit should be changed and another hole made. There is no shock to the operation and the small wound soon heals after the drain is removed. The one question of greatest importance is the danger that might be done to young, growing bone centers, which might result in later shortening of the upper end of the femur. The results of the operation are, in early cases, so uniformly good that this danger is largely hypothetic and may be ignored, especially when compared to the disastrous results through the loss of bone in delayed cases.

Nontraumatic Osteomyelitis of Flat Bones of Skull

DR. DONALD MUNRO, Boston: Reports of only 221 cases could be collected from the literature. Pathologically it is fundamentally a condition of rarefying destructive osteitis due to a spreading infection of the diploic vessels and their tributaries. It occurs almost exclusively in association with disease of the paranasal sinuses and the tympanomastoid region. Operative procedures on these structures have no influence on its causation. The diagnosis is obligatory following the demonstration of pus enclosed between either the periosteum or dura and diploic bone. Meningitis, "no complications" and thrombosis or infection of the cranial venous sinuses and other cranial veins are the commonest complications of the disease. Treatment should be early and radical. The mortality is approximately 50 per cent, slightly higher in the frontal bone cases and slightly lower in the temporal bone cases.

Thrombophlebitis of Pelvic Veins

DR. HILLIARD E. MILLER, New Orleans: It is quite evident that simple ligation of the affected vein, with localization of the thrombus formation to the ligated segment, is sufficient to stop immediately the ejection of all infected emboli into the general circulation and to localize the infection to that segment of the vein which has already erected a thorough local barrier. The results in such cases are so prompt and spectacular that they refute any argument against operation.

Pelvic Endometriosis with Spontaneous Rupture of Large Endometrial Cysts

DR. EMIL NOVAK, Baltimore: Two of our three cases suggested acute appendicitis; in the third a presumptive diagnosis had been made of ovarian cyst with twisted pedicle. The possibility of this accident should be borne in mind when acute abdominal symptoms develop in cases in which the history and the pelvic conditions suggest the probability of pelvic endometriosis.

Acute Empyema Thoracis

DRS. ALTON OCHSNER and I. M. GAGE, New Orleans: In an analysis of 124 cases, it was found that a higher proportion of cases occurred in the white race (64.4 per cent) than in the Negro (35.4 per cent). The greatest number of cases occurred between the ages of 11 and 20 years. The mortality rate was highest above 50. Lobar pneumonia was the cause of empyema in 61.9 per cent, influenza in 18.1 per cent, tuberculosis in 12.8 per cent, lung abscess in 5.5 per cent, and a metastatic lesion and stab wound of the thorax each in 0.9 per cent. Tuberculosis was the underlying lesion in 15.4 per cent of the Negro patients and in 11.1 per cent of the white patients. In the Negro race the mortality was higher in left-sided (33.3 per cent) than in right-sided processes (5 per cent), whereas in the white the mortality in the right and left-sided lesions was 13.16 per cent and 3.19 per cent, respectively. Empyema was of the metapneumonic variety in 60.4 per cent, synpneumonic in 21.6 per cent, tuberculous in 2.6 per cent, and staphylococcic in 5.4 per cent. Improvement and recovery occurred in 92.24 per cent of the metapneumonic cases, in 75 per cent of the synpneumonic cases, and in all the staphylococcic cases. In the treatment of this series of cases, aspiration alone was used in 8.8 per cent, aspiration plus air injection in 21.5 per cent, intercostal drainage in 30.3 per cent, and rib resection in 39.2 per cent. Aspiration alone resulted in improvement or recovery in 41.7 per cent. Aspiration of the pleural exudate combined with air injection gave improvement or recovery in 79.2 per cent. The mortality rate was 10.3 per cent. Intercostal drainage resulted in improvement in 80.5 per cent, recovery in 7.3 per cent, and death in 12.2 per cent. As the result of rib resection, 79.2 per cent were improved, 5.2 per cent recovered, and 13.2 per cent died. The lowest mortality, 10.3 per cent, was obtained by aspiration of the pleural contents combined with air injection. Open drainage was employed in 45.2 per cent of the cases, of which number 14.5 per cent of the patients died and 83.2 per cent were improved or recovered. The mortality in the Negro following open drainage was 26.3 per cent, whereas that in the white patients was 6.9 per cent. Closed drainage was used in 54.2 per cent, of which number 12.2 per cent died and 87.7 per cent were improved or recovered. Complications developed in 5.8 per cent of the cases; 62.5 per cent of the complications occurred in the white race. Acute nephritis, representing 21.8 per cent of all complications, was the most frequent complication encountered. Of the complications, bronchial fistula and abscess of the chest wall represent 15.6 per cent and 9.3 per cent, respectively. There was a mortality rate in the entire group of 15.3 per cent, in the white patients of 10 per cent, and in the Negro patients of 25 per cent; 82.2 per cent of the entire group were either improved or recovered.

Treatment of Empyema by Aspiration and Air Replacement Without Drainage

DR. JOSEPH A. DANNA, New Orleans: In thirty-five cases this treatment has proved not only as satisfactory as the more accepted methods but safer and in the long run calculated to reduce materially the present mortality. There have been two deaths in the series, neither of which can be attributed to the method. All the others have made a complete clinical recovery. The treatment consists in emptying the empyema cavity of pus preferably through a large needle, and gradually, as the pus is being removed, replacing it with air, the volume of air injected being equal to that of the pus removed. No drain is used, no form of suction or drainage. In no case in which the treatment has been instituted, and which I have been able to follow to ultimate conclusion, has it been necessary to resort to open or closed drainage. Complete emptying of the cavity is essential to bringing about a cure. One case was cured with one aspiration. In some cases, ten or more were given. The average has been about three. If the aspiration is not immediately followed by this improvement, it means that there is another cavity which has not been reached, or that the patient has some other serious condition that is making him sick.

Sarcoma of Spleen

DR. LOUIS FRANK, Louisville, Ky.: Of two cases of sarcoma of the spleen, both of the lymphocytic type, one patient died within twenty-four hours and the other eight months after operation. Sarcoma of the spleen may simulate pernicious anemia in its symptomatology and hemocytology.

Are the So-Called Essential Hematurias Chiefly Due to Ureteral Stricture?

DR. GUY L. HUNNER, Baltimore: It is generally conceded that kidneys involved in the so-called idiopathic or essential hematurias are subject to nephritis or nephritic-like changes. Other factors, such as thickened renal capsule, undue renal mobility, and pathologic processes about the renal hilus, have been invoked as the immediate causes of intrarenal tension, vascular injury and the consequent bleeding. I believe these factors are active and determinant in certain instances, but ureteral stricture can be demonstrated in most cases of so-called essential hematuria. It is the stricture, more often than any other factor, that causes the increased intrarenal tension, vascular injury and bleeding. Focal infections seem to be an active factor in certain cases of so-called essential hematuria, these patients failing to respond to seemingly adequate ureteral drainage but ceasing to bleed after removal of some active focus of infection. It is probable that in some of these cases the toxins from focal infections are causing direct injury to the kidney tissues, while in others they act indirectly by keeping up an irritation of the ureteral stricture area, thus baffling efforts to obtain perfect drainage. Ureteral stricture was demonstrated in 174 of 200 cases. Seventy-five presented other lesions which might have been the more important factor in the bleeding: calculus, tuberculosis, tumor of the kidney, elusive ulcer and pyogenic cystitis or ulcer. In ninety-nine cases stricture of the ureter was the only lesion found to account for the hematuria.

V 96
1931

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Pathology, Boston

6: 631-804 (Nov.) 1930

Reticulin. J. Nageotte and L. Guyon, Paris, France.—p. 631.
Pathology of Spleen in Yellow Fever. O. Klotz and T. H. Belt, Toronto.—p. 655.
Pathology of Liver in Yellow Fever. O. Klotz and T. H. Belt, Toronto.—p. 663.
Regeneration of Liver and Kidney Following Yellow Fever. O. Klotz and T. H. Belt, Toronto.—p. 689.
Nature of Fowl-Pox Virus as Indicated by Its Reaction to Treatment with Potassium Hydroxide and Other Chemicals. E. W. Goodpasture and A. M. Woodruff, Nashville, Tenn.—p. 699.
Relation of Virus of Fowl-Pox to Specific Cellular Inclusions of Disease. C. E. Woodruff and E. W. Goodpasture, Nashville, Tenn.—p. 713.
Rhinosporidium Seeberi: Pathological Histology and Report of the Third Case from United States. C. V. Weller and A. D. Riker, Ann Arbor, Mich.—p. 721.
Endocardial Pockets. O. Saphir, Cleveland.—p. 733.
Tissue Immunity: Cellular Reactions of Skin of Guinea-Pig as Influenced by Local Active Immunization. P. R. Cannon and G. A. Pacheco, Chicago.—p. 749.
Comparative Histologic Study of Acute Meningo-Encephalitis Produced in Rabbits by Viruses of Neurovaccinia and Herpes Simplex. E. T. C. Spooner, Boston.—p. 767.

Archives of Internal Medicine, Chicago

46: 741-900 (Nov.) 1930

*Geographic or Climatic Variations in Death Rate from Pernicious Anemia, Exophthalmic Goiter, Addison's Disease and Angina Pectoris. C. A. Mills, Cincinnati.—p. 741.
*Diabetes Mellitus: Colloidal Osmotic Pressure of Blood. I. M. Rabinowitch, Montreal.—p. 752.
*Effects of Intravenous Injections of Foreign Protein on Peptic Ulcer. J. Meyer and L. B. Kartoon, Chicago.—p. 768.
*Boltz Test in Urinalysis. A. T. Brice, Jr., Washington, D. C.—p. 778.
Antibody Formation in Kala-Azar. H. L. Chung and H. A. Reimann, Peiping, China.—p. 782.
*Erythrocyte Sedimentation Test in Tuberculosis. A. L. Banyai and S. V. Anderson, Wauwatosa, Wis.—p. 787.
*Action and Excretion of Nitrates. N. M. Keith, M. Whelan and E. G. Bannick, Rochester, Minn.—p. 797.
*Peripheral Neuritis Complicated by Massive Collapse of Lung Following Tonsillectomy. H. V. Dwyer, Detroit.—p. 833.
*Carcinomatous Degeneration of Polyp of Stomach. T. G. Miller, F. L. Eliason and V. W. M. Wright, Philadelphia.—p. 841.
*Low Basal Metabolism Without Myxedema. F. M. Thurmon, Boston, and W. O. Thompson, Chicago.—p. 879.

Climatic Variations in Death Rate from Pernicious Anemia, Exophthalmic Goiter, Addison's Disease and Angina Pectoris.—The data presented by Mills are a strong suggestion of climatic suppression of the metabolic diseases in those tropical and subtropical areas where other metabolic functions are also lowered by the heat. The consumption of oxygen, the blood pressure and the expenditure of energy in general are lowered, resulting in a lessening of the metabolic strain, so that the exhaustive or overstimulative diseases of metabolism appear with less frequency. It is of especial interest that Japan and northern China are found to be similar to the tropics in this characteristic. Although their winter is severe and stimulating, it cannot be sufficient to counterbalance the severe depressive influence of the prolonged moist heat of the tropical summer. The part played by differences in diet is impossible of evaluation at present. It is significant, however, to note that Americans going to China and continuing on practically unchanged dietary standards show a distinct fall in blood pressure within two years, while Chinese coming to America show a rise.

Colloidal Osmotic Blood Pressure in Diabetes Mellitus.—Though this investigation by Rabinowitch failed so far as finding an explanation for certain high cholesterol values occasionally encountered in diabetic blood is concerned, a new phenomenon was observed. It is suggested that though there is relatively little direct evidence, the sum of all available data (clinical and laboratory) tends to support the view that in diabetes with lipemia there is constantly exerted in the capillaries a colloidal pressure greater than the normal. To overcome the latter for purposes of renal excretion, a greater hydrostatic pressure is required; this increased pressure, though relatively small, when continued over a long period probably has the same effect as more marked intracapillary pressure exerted over a short period. In animals the latter, when produced either by injection of epinephrine or by sympathetic stimulation, is alleged to cause arteriosclerosis. Is this, therefore, a cause of the marked incidence of cardiovascular disease in diabetes? The data are recorded, in order that the theory may be tested by others having similar facilities.

Effects of Intravenous Injections of Foreign Protein on Peptic Ulcer.—Meyer and Kartoon conclude from their studies that relief from pain during treatment for peptic ulcer obtained by intravenous injections of foreign protein is independent of changes in acidity. They believe that the diminution in gastric tonus and contractions that occurs following injections of foreign protein is an important factor in the relief from pain. The increased vascularity in the stomach and in the capillary bed in and about the ulcer is the important factor in relief from pain. They advance the hypothesis that rhythmic pain in ulcer is due to rhythmic variations and disturbances in the vascular bed in and about the ulcer, associated with digestive peristaltic activity. Nonspecific protein is to be considered only as an adjunct in the treatment for peptic ulcer.

Boltz Test in Urinalysis.—Brice reports the results of the examination of 525 specimens by the Boltz test. Of the 161 specimens from medical cases, 35 per cent were found to have positive Boltz reactions; of 332 from surgical cases, 33 per cent were positive; of 32 from obstetric cases, 16 per cent were positive. The highest positive observation was 72 per cent in the group of specimens from patients with degenerative diseases of the kidneys. Another highly positive observation among the medical groups was 46 per cent of the specimens from patients with acute infections. The highest positive observation in the surgical groups was in specimens from cases of appendicitis, the percentage being 42. The small number of specimens from uncomplicated obstetric cases showed no positive observations. In the normal human man on an average diet, no amino-acid detectable by the Boltz test should be eliminated in the urine.

Erythrocyte Sedimentation Test in Tuberculosis.—Banyai and Anderson studied the sedimentation test in 2,000 cases. Of the 128 patients having manifest active tuberculosis, 7.35 per cent showed normal sedimentation curves. This group included 14 cases of minimal, 54 of moderately advanced and 13 of far advanced pulmonary tuberculosis and 47 of extrapulmonary tuberculosis. If this working error is discounted, the test gives valuable information concerning the activity of the disease, the amount of tissue destruction and the toxicity of the process. Retarding of the sedimentation speed in a patient in whom it was originally very rapid may be interpreted as a sign of improvement. A constantly increased rate indicates the spread of the disease or the onset of some complication. The test cannot be used for estimating the extent of the lesion. A limited process with marked disintegration of tissue and characteristic toxic symptoms will cause a more rapid sedimentation rate than an extensive fibrotic lesion with slight toxicity. A rapid rate found on repeated examinations means an unfavorable prognosis. The greatest merit of the test lies in its value as an index of changes in the general and local condition of the patient. It should be used as a guide for prescribing and controlling routine or special treatment of the tuberculous. It may serve as a valuable aid in connection with the physical examination for determining the patient's working capacity before discharge from the sanatorium and at each reexamination at the dispensary.

Action and Excretion of Nitrates.—Studies made by Keith et al. show that nitrates are efficient diuretics. The diuretic response is accompanied by certain specific metabolic changes which involve the inorganic salts, the acid-base equilibrium, water balance and the nitrogen balance. The best results were obtained by the use of ammonium nitrate apparently

because, on absorption, the ammonium radical is readily converted into urea, leaving the nitrate portion of the molecule free to act. The concentration of nitrate in the blood rises considerably, and nitrate is readily excreted by the kidney. In man, as much as 90 per cent of the nitrate ingested has been recovered in the urine, indicating that only small amounts are excreted through other channels or are taken care of by the organism in other ways. These results suggest that nitrate might be usefully employed as a test of renal function. In contrast to the results obtained by others, there was little evidence in these experiments that considerable amounts of nitrate are destroyed in the human body. Systemic nitrite-like actions did not occur, with the exception of the rare development of methemoglobinemia. The disturbance in the acid-base equilibrium toward the acid side is not sufficiently great in man to produce significant reduction in the carbon dioxide combining power of the plasma, but it does cause an increase in the hydrogen ion concentration of the urine, and a markedly increased excretion of fixed base and ammonia. In a single experiment, retention of nitrogen occurred. The action of ammonium nitrate in cases of edema was similar to but not as uniform as its action in the normal subject. The concentration of nitrate in the blood rose to a higher level, and the excretion in the urine was not so rapid. The content of nitrate in edema fluid usually closely parallelled that of the blood plasma. The diuretic and metabolic effects often were slower in beginning but, once started were usually more prolonged. In some instances, active diuresis persisted for several days after ingestion of ammonium nitrate was discontinued. These results indicate that the rapidity and extent of the action of nitrate depend in part on the amount and composition of the edema fluid and also on the degree of restoration of the normal current of fluid from tissues to blood and from blood to urine. When severe renal injury is present, marked retention of nitrate may occur and may cause specific toxic symptoms. Toxic phenomena rarely have occurred. The use of enteric coated pills containing ammonium nitrate has lessened the occurrence of nausea and vomiting. When the rare instances of methemoglobinemia do occur, there are no annoying subjective or toxic symptoms and simple withdrawal of the drug results in rapid disappearance of the cyanosis. The occurrence of actual toxic effects from too high a concentration of nitrate in the body fluids can be avoided. Effective measures against toxic effects are preliminary tests of renal function and, on the first suspicion of toxemia, estimation of the nitrate content of the blood.

Peripheral Neuritis with Paralysis.—Dwyer reports a case of multiple peripheral neuritis with paralysis in the presence of a renal tuberculosis. The etiology was uncertain. The interesting features of the case were the clearing up of the paralysis following the removal of foci of infection and the occurrence of massive collapse of the lung following tonsillectomy.

Carcinomatous Degeneration of Polyp of Stomach.—Eight cases of carcinomatous polyp of the stomach are reported by Miller et al., and twenty-four cases previously reported in the literature are reviewed. Carcinomatous polyp of the stomach apparently is more frequent than has been generally believed, having been found in 35 per cent of the twenty-three cases of intragastric polyp studied adequately by them, and both the history and the pathologic data suggest that it usually originates in polyp of a benign nature. The benign intragastric polyps that show this tendency to malignant change are usually of an adenomatous construction. Most of the patients showing such malignant change are males (83 per cent), and the age incidence is the same as for mural gastric cancer. The symptoms are those of any malignant gastric lesion with, in addition, those of the two other common consequences of gastric polyp—intermittent pyloric obstruction and hemorrhage. The hemorrhage may be frank or occult; it not infrequently leads to an erroneous diagnosis of primary anemia (three of the authors' eight cases). Consequently, gastric polyp should be considered in all cases of unexplained anemia. Roentgenologic study alone often makes the diagnosis of gastric polyp, and a malignant condition may be suspected on the basis of the clinical picture. Gastric polyp may be overlooked at operation, and special procedures, including gastrotomy and exploration of the interior of the stomach with a gastroscope, are indicated when any clinical suspicion of a polyp exists or when a suspected ulcer is not found. All gastric polyps, when demonstrated, deserve the radical surgical treatment commonly employed in cases of known or suspected gastric carcinoma.

Low Basal Metabolism Without Myxedema.—Frequent observations have been made by Thurmon and Thompson on 196 patients with basal metabolisms ranging from 11 to 45 per cent below the average normal (in only eight was it lower than minus 25 per cent), but no edema that could be detected. At least eleven patients could be considered normal (with basal metabolic rates varying from minus 11 to minus 24 per cent), but it was often difficult to decide whether a patient was normal or abnormal. In thirteen there appeared to be an underfunction of the thyroid which was apparently too mild to result in myxedema (so-called hypothyroidism without myxedema). The remaining 172 patients appeared to be suffering from various pathologic conditions but not from an underfunction of the thyroid, as judged by the clinical picture and the response to doses of desiccated thyroid sufficient to maintain the basal metabolism at a standard normal level. An exact differentiation into clinical entities is not yet possible in a large number of these cases, but a rough classification has been made, largely on the basis of symptoms. There were seventy-nine in whom nervousness, worry and ease of fatigue were the outstanding complaints, twenty-one in whom scantiness or absence of menstruation was the principle abnormality, and seventy-two who suffered from various other pathologic conditions such as starvation, pituitary tumor and muscular atrophy. Muscle tone appears to be an important factor in regulating the rate of oxygen consumption under basal conditions. If the basal metabolism is lower than minus 25 per cent, an underfunction of the thyroid is usually present. If the depression is less than 21 per cent below the average normal, an underfunction of the thyroid is usually not present.

Archives of Surgery, Chicago

21: 717-886 (Nov.) 1930

*Tubercle-Like Structures in Human Goiters. R. H. Jaffé, Chicago. —p. 717.
*Postoperative Urinary Incontinence. A. E. Goldstein and B. S. Abeshouse, Baltimore.—p. 729.
*Actinomycosis of Thorax. L. P. Good, Rochester, Minn.—p. 786.
*Intracranial Calcification. C. B. Courville and L. J. Adelstein, Los Angeles.—p. 801.
*Closed Intestinal Loop: 1. Relation of Intraloop (Jejunum) Pressure to Clinical Condition of Animal. G. E. Burget, K. Martzloff, G. Suckow and R. C. Thornton, Portland, Ore.—p. 829.
*Sympathectomy by Arterial Excision. E. P. Lehman, University, Va. —p. 838.
*Splenectomy in Gaucher's Disease. M. B. Bonta, Rochester, Minn. —p. 851.
*Toxic Proteose Fraction in Material from Various Sources. J. T. McClintock and H. M. Hines, Iowa City.—p. 860.

Tubercle-Like Structures in Human Goiters.—In three cases of nodose goiter and in one case of diffuse goiter with mild hyperthyroidism, Jaffé found in the removed thyroid tissue nodular structures composed of epithelioid cells and giant cells that resembled miliary tubercles. The origin of these cells could be traced to the follicular epithelium. The patients showed no other signs of tuberculosis and made an excellent recovery. There was no caseation in these nodules but much fibrosis about them. In spite of a most careful search, tubercle bacilli could not be demonstrated. The explanation is advanced that the tubercle-like structures are the result of noninfectious focal involutional changes of newly formed and old follicles. These nontuberculous changes should be separated from true tuberculosis of the thyroid.

Postoperative Urinary Incontinence.—In the series of 220 prostatectomies reviewed by Goldstein and Abeshouse, postoperative urinary incontinence of some degree occurred in 1 case (0.7 per cent) of 134 suprapubic and 5 cases (5.8 per cent) of 86 perineal prostatectomies. The occurrence of urinary incontinence following either type of prostatectomy is dependent on the destruction or derangement of both vesical sphincters. In the hands of experienced surgeons, the probability of damaging either vesical sphincter is decidedly less during a perineal than during a suprapubic prostatectomy. It appears that in the majority of cases the functioning sphincter following suprapubic and perineal prostatectomy is the external vesicle sphincter, but in

V 96
1931

Paul A. Quintanar M. D.

some cases of perineal prostatectomy the internal sphincter also may be preserved. In their studies of prostatectomy the authors found that the etiologic factor in the production of urinary incontinence is more frequently injury during the operation to the external sphincter than injury to the internal sphincter, as the internal sphincter may have been injured or destroyed prior to operation. The type of hemostasis employed may influence the preservation or destruction of one or both sphincters. Injury to the vesical sphincters can be avoided in a properly performed perineal prostatectomy: (1) by retracting the external sphincter and transverse perinei muscles upward; (2) by making the urethrotomy incision for the introduction of the Young prostatic tractor below the external sphincter, preferably at or near the apex of the prostate; (3) by an extra-urethral removal of the hypertrophied gland, leaving the internal sphincter and prostatic urethra intact, and (4) by exerting traction on the Young prostatic tractor in an upward and outward direction. The introduction of a catheter into the bladder through the urethra at the completion of a perineal prostatectomy facilitates the healing of an injured vesical sphincter and acts as a splint to preserve the continuity of the urethral walls. Various anatomic defects about the vesical neck and posterior urethra resulting from suprapubic and perineal prostatectomy may be associated with the loss of function of both vesical sphincters.

Actinomycosis of Thorax.—Good analyzes thirteen cases of primary actinomycosis of the thorax observed at the Mayo Clinic and forty cases reported in the literature. The significant symptoms are tabulated. The symptoms of actinomycosis of the thorax may simulate those of bronchitis, bronchopneumonia, pulmonary abscess and pulmonary tuberculosis. The more common symptoms are fever, cough, sputum, pain, weakness, loss of weight, dyspnea, anemia and external abscesses. The diagnosis of actinomycosis is made: (1) by demonstrating the sulphur granule in the sputum, in empyema fluid or in the pus from an abscess, or (2) by demonstrating the actinomycotic lesion in a histologic specimen. Treatment should be directed at improving the general health, the administration to tolerance of potassium iodide, the drainage of abscesses and empyema pockets, and the proper use of x-rays and radium. The disease is fatal in from 60 to 70 per cent of the cases.

Intracranial Calcification.—Twelve cases are reported by Courville and Adelstein. Of the ten growths verified histologically, five proved to be neurogliablastomas (spongioblastomas), three were astrocytomas, one was an ependymal glioma (ependymoblastoma) and one an unclassified glioma, apparently a cerebral medulloblastoma. Actual bone formation was found in one case. They report a case of calcification in a cerebellar glioma the counterpart of which they have not been able to find in literature.

Closed Intestinal Loop.—A method of attaching a closed intestinal loop to the anterior body wall where it can be readily reached with a hypodermic needle is described by Burget et al. Dogs with closed jejunal loops, with the continuity of the intestinal tract reestablished, can be kept alive indefinitely, provided the pressure in the loop is kept down by aspiration of the fluid. Such animals with closed jejunal loops, barring complication, do not show the clinical symptoms of obstruction. Vomiting is seldom seen, and the blood chlorides do not undergo significant change. By permitting distention and pressure to take place in the closed loop, vomiting is precipitated; refusal of food is an invariable symptom. The animal is immediately relieved and will eat almost at once following aspiration of the fluid. This would seem to prove that the symptoms are due to reflex nausea and pain from distention of the loop. Although there is probably some absorption of toxins at this time, it is not the important factor in producing the symptoms observed. The flora found in the jejunal loops consists predominately of *B. coli, B. welchii,* enterococci and streptococci. The loops in fully recovered animals appear to be essentially normal and should in some ways be superior to the Thiry fistula for the investigation of problems of secretion and absorption.

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Colorado Medicine, Denver

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Spinal Anesthesia. W. A. Bryant, Scott City, Kan.—p. 467.
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17: 203-248 (Nov.) 1930

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Radium or Surgery in Poor Risk Patients. S. W. Fleming, West Palm Beach.—p. 228.

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12: 319-358 (Nov.) 1930

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Kansas Medical Society Journal, Topeka

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Postencephalitic Oculomotor Spasm: Case. W. C. Menninger, Topeka. —p. 442.

Kentucky Medical Journal, Bowling Green.

28: 591-646 (Dec.) 1930

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Achylia Gastrica. F. M. Stites, Louisville.—p. 599.
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Renal Tuberculosis. C. Hill, Louisville.—p. 609.
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Sensitization. P. F. Barbour, Louisville.—p. 616.

because, on absorption, the ammonium radical is readily converted into urea, leaving the nitrate portion of the molecule free to act. The concentration of nitrate in the blood rises considerably, and nitrate is readily excreted by the kidney. In man, as much as 90 per cent of the nitrate ingested has been recovered in the urine, indicating that only small amounts are excreted through other channels or are taken care of by the organism in other ways. These results suggest that nitrate might be usefully employed as a test of renal function. In contrast to the results obtained by others, there was little evidence in these experiments that considerable amounts of nitrate are destroyed in the human body. Systemic nitrite-like actions did not occur, with the exception of the rare development of methemoglobinemia. The disturbance in the acid-base equilibrium toward the acid side is not sufficiently great in man to produce significant reduction in the carbon dioxide combining power of the plasma, but it does cause an increase in the hydrogen ion concentration of the urine, and a markedly increased excretion of fixed base and ammonia. In a single experiment, retention of nitrogen occurred. The action of ammonium nitrate in cases of edema was similar to but not as uniform as its action in the normal subject. The concentration of nitrate in the blood rose to a higher level, and the excretion in the urine was not so rapid. The content of nitrate in edema fluid usually closely parallelled that of the blood plasma. The diuretic and metabolic effects often were slower in beginning but, once started were usually more prolonged. In some instances, active diuresis persisted for several days after ingestion of ammonium nitrate was discontinued. These results indicate that the rapidity and extent of the action of nitrate depend in part on the amount and composition of the edema fluid and also on the degree of restoration of the normal current of fluid from tissues to blood and from blood to urine. When severe renal injury is present, marked retention of nitrate may occur and may cause specific toxic symptoms. Toxic phenomena rarely have occurred. The use of enteric coated pills containing ammonium nitrate has lessened the occurrence of nausea and vomiting. When the rare instances of methemoglobinemia do occur, there are no annoying subjective or toxic symptoms and simple withdrawal of the drug results in rapid disappearance of the cyanosis. The occurrence of actual toxic effects from too high a concentration of nitrate in the body fluids can be avoided. Effective measures against toxic effects are preliminary tests of renal function and, on the first suspicion of toxemia, estimation of the nitrate content of the blood.

Peripheral Neuritis with Paralysis.—Dwyer reports a case of multiple peripheral neuritis with paralysis in the presence of a renal tuberculosis. The etiology was uncertain. The interesting features of the case were the clearing up of the paralysis following the removal of foci of infection and the occurrence of massive collapse of the lung following tonsillectomy.

Carcinomatous Degeneration of Polyp of Stomach.—Eight cases of carcinomatous polyp of the stomach are reported by Miller et al., and twenty-four cases previously reported in the literature are reviewed. Carcinomatous polyp of the stomach apparently is more frequent than has been generally believed, having been found in 35 per cent of the twenty-three cases of intragastric polyp studied adequately by them, and both the history and the pathologic data suggest that it usually originates in polyp of a benign nature. The benign intragastric polyps that show this tendency to malignant change are usually of an adenomatous construction. Most of the patients showing such malignant change are males (83 per cent), and the age incidence is the same as for mural gastric cancer. The symptoms are those of any malignant gastric lesion with, in addition, those of the two other common consequences of gastric polyp—intermittent pyloric obstruction and hemorrhage. The hemorrhage may be frank or occult; it not infrequently leads to an erroneous diagnosis of primary anemia (three of the authors' eight cases). Consequently, gastric polyp should be considered in all cases of unexplained anemia. Roentgenologic study alone often makes the diagnosis of gastric polyp, and a malignant condition may be suspected on the basis of the clinical picture. Gastric polyp may be overlooked at operation, and special procedures, including gastrotomy and exploration of the interior of the stomach with a gastroscope, are indicated when any clinical suspicion of a polyp exists or when a suspected ulcer is not found. All gastric polyps, when demonstrated, deserve the radical surgical treatment commonly employed in cases of known or suspected gastric carcinoma.

Low Basal Metabolism Without Myxedema.—Frequent observations have been made by Thurmon and Thompson on 196 patients with basal metabolisms ranging from 11 to 45 per cent below the average normal (in only eight was it lower than minus 25 per cent), but no edema that could be detected. At least eleven patients could be considered normal (with basal metabolic rates varying from minus 11 to minus 24 per cent), but it was often difficult to decide whether a patient was normal or abnormal. In thirteen there appeared to be an underfunction of the thyroid which was apparently too mild to result in myxedema (so-called hypothyroidism without myxedema). The remaining 172 patients appeared to be suffering from various pathologic conditions but not from an underfunction of the thyroid, as judged by the clinical picture and the response to doses of desiccated thyroid sufficient to maintain the basal metabolism at a standard normal level. An exact differentiation into clinical entities is not yet possible in a large number of these cases, but a rough classification has been made, largely on the basis of symptoms. There were seventy-nine in whom nervousness, worry and ease of fatigue were the outstanding complaints, twenty-one in whom scantiness or absence of menstruation was the principle abnormality, and seventy-two who suffered from various other pathologic conditions such as starvation, pituitary tumor and muscular atrophy. Muscle tone appears to be an important factor in regulating the rate of oxygen consumption under basal conditions. If the basal metabolism is lower than minus 25 per cent, an underfunction of the thyroid is usually present. If the depression is less than 21 per cent below the average normal, an underfunction of the thyroid is usually not present.

Archives of Surgery, Chicago

21: 717-886 (Nov.) 1930

*Tubercle-Like Structures in Human Goiters. R. H. Jaffé, Chicago. —p. 717.
*Postoperative Urinary Incontinence. A. E. Goldstein and B. S. Abeshouse, Baltimore.—p. 729.
*Actinomycosis of Thorax. L. P. Good, Rochester, Minn.—p. 786.
*Intracranial Calcification. C. B. Courville and L. J. Adelstein, Los Angeles.—p. 801.
*Closed Intestinal Loop: 1. Relation of Intraloop (Jejunum) Pressure to Clinical Condition of Animal. G. E. Burget, K. Martzloff, G. Suckow and R. C. Thornton, Portland, Ore.—p. 829.
*Sympathectomy by Arterial Excision. E. P. Lehman, University, Va. —p. 838.
*Splenectomy in Gaucher's Disease. M. B. Bonta, Rochester, Minn. —p. 851.
*Toxic Proteose Fraction in Material from Various Sources. J. T. McClintock and H. M. Hines, Iowa City.—p. 860.

Tubercle-Like Structures in Human Goiters.—In three cases of nodose goiter and in one case of diffuse goiter with mild hyperthyroidism, Jaffé found in the removed thyroid tissue nodular structures composed of epithelioid cells and giant cells that resembled miliary tubercles. The origin of these cells could be traced to the follicular epithelium. The patients showed no other signs of tuberculosis and made an excellent recovery. There was no caseation in these nodules but much fibrosis about them. In spite of a most careful search, tubercle bacilli could not be demonstrated. The explanation is advanced that the tubercle-like structures are the result of noninfectious focal involutional changes of newly formed and old follicles. These nontuberculous changes should be separated from true tuberculosis of the thyroid.

Postoperative Urinary Incontinence.—In the series of 220 prostatectomies reviewed by Goldstein and Abeshouse, postoperative urinary incontinence of some degree occurred in 1 case (0.7 per cent) of 134 suprapubic and 5 cases (5.8 per cent) of 86 perineal prostatectomies. The occurrence of urinary incontinence following either type of prostatectomy is dependent on the destruction or derangement of both vesical sphincters. In the hands of experienced surgeons, the probability of damaging either vesical sphincter is decidedly less during a perineal than during a suprapubic prostatectomy. It appears that in the majority of cases the functioning sphincter following suprapubic and perineal prostatectomy is the external vesicle sphincter, but in

V 96
1931

Paul A. Quintanar, M. D.

some cases of perineal prostatectomy the internal sphincter also may be preserved. In their studies of prostatectomy the authors found that the etiologic factor in the production of urinary incontinence is more frequently injury during the operation to the external sphincter than injury to the internal sphincter, as the internal sphincter may have been injured or destroyed prior to operation. The type of hemostasis employed may influence the preservation or destruction of one or both sphincters. Injury to the vesical sphincters can be avoided in a properly performed perineal prostatectomy: (1) by retracting the external sphincter and transverse perinei muscles upward; (2) by making the urethrotomy incision for the introduction of the Young prostatic tractor below the external sphincter, preferably at or near the apex of the prostate; (3) by an extra-urethral removal of the hypertrophied gland, leaving the internal sphincter and prostatic urethra intact, and (4) by exerting traction on the Young prostatic tractor in an upward and outward direction. The introduction of a catheter into the bladder through the urethra at the completion of a perineal prostatectomy facilitates the healing of an injured vesical sphincter and acts as a splint to preserve the continuity of the urethral walls. Various anatomic defects about the vesical neck and posterior urethra resulting from suprapubic and perineal prostatectomy may be associated with the loss of function of both vesical sphincters.

Actinomycosis of Thorax.—Good analyzes thirteen cases of primary actinomycosis of the thorax observed at the Mayo Clinic and forty cases reported in the literature. The significant symptoms are tabulated. The symptoms of actinomycosis of the thorax may simulate those of bronchitis, bronchopneumonia, pulmonary abscess and pulmonary tuberculosis. The more common symptoms are fever, cough, sputum, pain, weakness, loss of weight, dyspnea, anemia and external abscesses. The diagnosis of actinomycosis is made: (1) by demonstrating the sulphur granule in the sputum, in empyema fluid or in the pus from an abscess, or (2) by demonstrating the actinomycotic lesion in a histologic specimen. Treatment should be directed at improving the general health, the administration to tolerance of potassium iodide, the drainage of abscesses and empyema pockets, and the proper use of x-rays and radium. The disease is fatal in from 60 to 70 per cent of the cases.

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Renal Tuberculosis. C. Hill, Louisville.—p. 609.
Vesicovaginal Fistula. W. Hurte, Louisville.—p. 613.
Sensitization. P. F. Barbour, Louisville.—p. 616.

Medical Journal and Record, New York

132: 469-520 (Nov. 19) 1930

Nature of Allergy. F. Herb, Chicago.—p. 469.
Heart in Obscure Thyroid Dysfunction. L. N. Boston, Philadelphia. —p. 474.
Advantage of Making Mental Survey of Patients Applying for Orthopedic Treatment. H. Keller, New York.—p. 477.
Fatuity of Some Means of Aural Treatment in Chronic Deafness. G. B. McAuliffe, New York.—p. 479.
Tardy or Late Ulnar Neuritis. M. Keschner and W. Berman, New York.—p. 480.
Pediatric Reflections. J. M. Marcus, Atlantic City.—p. 484.
Peroral Effect of Follicular Hormones. W. Schoeller, M. Dohrn and W. Hohlweg, Berlin.—p. 487.
Malfunction of Pituitary Gland and Its Treatment. S. A. Loewenberg, Philadelphia.—p. 493.
Endocrine Factors in Migraine. E. F. Hartung, New York.—p. 497.
Certain Problems in Treatment of Thyroid Disease. A. M. Crispin, New York.—p. 500.

132: 521-572 (Dec. 3) 1930

Some Unusual Cases of Priapism. M. Huhner, New York.—p. 521.
Medical Examination for Life Insurance. O. T. Osborne, New Haven, Conn.—p. 524.
Roentgenographic Examination of Chest. M. Wulff and J. A. Myers, Minneapolis.—p. 527.
Nature of Allergy. F. Herb, Chicago.—p. 529.
Hypocalcemia with Lowered Basal Metabolism and Tendency to Bleeding (Epistaxis). H. I. Goldstein, Camden, N. J.—p. 533.
Agranulocytic Angina. H. Mandelbaum, Brooklyn.—p. 535.
What Practitioner Can and Cannot Do in Gastro-Enterology. H. J. Bartle, Philadelphia.—p. 539.
Gallbladder Pathology. M. Einhorn, New York.—p. 544.
Endocrine Treatment in Gastric and Duodenal Ulcer. S. J. Essenson, New York.—p. 549.
Fluoroscopy in Gastro-Intestinal Diseases. E. Boros, New York.—p. 551.
Pruritus Ani: Causes and Treatment. J. B. Becker, Philadelphia. —p. 553.

Military Surgeon, Washington, D. C.

67: 695-838 (Dec.) 1930

Medical Tactics of Future. G. M. Blech.—p. 733.
Medicolegal Significance of Scientific Crime Detection Laboratory of Northwestern University. C. Goddard.—p. 739.
Vergil's Tribute to Military Surgeon. L. T. Gager.—p. 767.

Missouri State Medical Assn. Journal, St. Louis

27: 565-626 (Dec.) 1930

*Diseases of Male Breast. M. P. Neal, Columbia, Mo., and B. T. Simpson, Buffalo.—p. 565.
Cyst Adenoma of Pancreas: Case. H. P. Kuhn, C. B. Schutz and F. C. Helwig, Kansas City.—p. 570.
*Hemiplegia: Causes and Treatment. G. W. Robinson, Jr., Kansas City. —p. 572.
Dislocation of Cervical Spine: Ten Cases. T. P. Brookes, St. Louis. —p. 579.
Duodenal Ulcer: Surgical Treatment. J. W. Thompson, Jr., St. Louis. —p. 582.
Malignant Tumors and Internist. L. D. Cady, St. Louis.—p. 585.
Circulatory Disturbances in Diabetes. D. R. Black, Kansas City. —p. 586.
Tonsillectomy and Adenoidectomy. O. E. Whitsell, St. Joseph.—p. 589.

Diseases of the Male Breast.—This report by Neal and Simpson is based on a pathologic study and comparison of a series of 5,000 breast lesions in 46,744 specimens that were submitted to the State Institute for the Study of Malignant Disease, Buffalo, during the period 1900 to 1925, and 314 breasts from 7,686 specimens that have been examined in the department of pathology of the University of Missouri School of Medicine, Columbia, from Aug. 1, 1922, to March 22, 1930. This group of 152 male breasts represents those found among 5,314 breasts encountered in 54,430 specimens submitted by routine for pathologic diagnosis. The group comprises 2.86 per cent of the total number of specimens. The diseases found in this group of 152 male breasts were as follows: Fifty-one, or 33.55 per cent, were cases of mastitis (acute mastitis four cases, or 2.63 per cent; chronic mastitis forty-seven cases, or 30.92 per cent). Three, or 1.97 per cent, were cysts. Of these only one, or 0.65 per cent, arose in the breast proper. Fifty-four, or 35.52 per cent, were non-neoplastic diseases. Sixty, or 39.47 per cent, were benign tumors (or 65.15 per cent of all tumors). Thirty-five, or 23.02 per cent, were malignant tumors (or 36.84 per cent of the neoplasms) divided as follows: (*a*) Sarcoma seven cases, or 4.6 per cent (or 20 per cent of the malignant tumors). (*b*) Carcinoma of skin origin, three cases, or 1.97 per cent. (*c*) Carcinoma of duct or acinus origin, twenty-five, or 16.44 per cent. The twenty-eight cases of carcinoma represent 80 per cent of the malignant growths. Ninety-five, or 62.5 per cent, were true neoplasms. Three, or 1.97 per cent, were ungrouped cases.

Hemiplegia; Causes and Treatment.—Believing that nearly every patient with brain hemorrhage dies during the initial attack and that recovery occurs only in the vascular cases with softening, Robinson strongly advises that every case of hemiplegia in which no cause can be determined by spinal fluid examination or eyeground changes should be treated as a case of thrombosis. This routine will accomplish two things. It will save many lives now being lost and, when the patient recovers from the initial attack, function will return closer to normal if the lesion is restricted as much as possible. Brain tumors are a more common cause of hemiplegia than is usually considered. The symptoms may come on suddenly. Brain hemorrhage is not a common cause of hemiplegia, either syphilitic or otherwise, and when present is almost invariably fatal.

Nebraska State Medical Journal, Norfolk

15: 457-496 (Dec.) 1930

Emergency Substitute for Blood Transfusion. J. E. Summers, Omaha. —p. 457.
Significance of Systolic Murmur. G. Fahr, Minneapolis.—p. 458.
Aschheim-Zondek Test for Pregnancy. E. C. Sage, Omaha.—p. 463.
*Coronary Thrombosis—Autopsy Findings. G. W. Covey, Lincoln.—p. 466.
Minot-Murphy Treatment in Types of Anemia Other Than Pernicious Anemia. V. E. Levine, Omaha.—p. 471.
Mechanics of Intracranial Injury in New-Born. W. C. Becker, Lincoln. —p. 484.

Coronary Thrombosis: Review of Conditions at Necropsy.—Among 284 necropsies, 41, or 14.4 per cent, were found by Covey to present appreciable coronary disease. Nineteen of the forty-one had occlusion of some major portion of one or both coronary arteries that was totally or partially responsible for death. One of the nineteen was syphilitic and the occlusive pathologic changes were limited to the mouths of both coronaries, the vessels themselves being healthy. It was, in other words a by-product of syphilitic aortitis. The remaining twenty-two had considerably more arteriosclerotic change in the coronary arteries than should be expected at their ages but apparently with little or no effect in relation to symptoms or death. In the cases of nonocclusion of marked coronary sclerosis, twenty-two in number, five were females, or 22.7 per cent. No cases occurred under 40 or over 75 years old. The average was 59.3 years. Of the twenty-two cases showing no occlusion, six, or 27.2 per cent, showed no unusual sclerosis outside these vessels, though usually the cerebral vessels were not examined. Eight showed generalized arteriosclerosis, but none of them were noted as marked or extreme. In the remaining eight, more than the usual amount of sclerotic change was noted in the aorta but not in other vessels. Of the eighteen cases of occlusion, in four, or 22.2 per cent, no appreciable sclerotic change was noted outside the coronaries. Twelve showed generalized sclerosis, noted as "marked" in five. In the two remaining the aorta was more diseased than could be expected in the normal for the given age. In 25 per cent, therefore, of the whole series the sclerotic process was markedly localized in the coronary arteries. The left coronary, particularly the anterior descending ramus, is the vessel usually most affected by sclerotic processes and consequently most commonly occluded. The right is least affected and less often occluded.

New Orleans Medical and Surgical Journal

83: 351-436 (Dec.) 1930

Problem of Cancer of Stomach. J. S. Horsley, Richmond, Va.—p. 351.
Digestive Tract in Pernicious Anemia. D. N. Silverman, New Orleans. —p. 357.
Colitis. C. W. Patterson, Rosedale, Miss.—p. 361.
Disabilities of Advancing Years. J. S. McLester, Birmingham, Ala. —p. 367.
Early Roentgen Diagnosis of Pulmonary Tuberculosis. L. J. Menville, New Orleans.—p. 370.
Involution Melancholia. F. F. Young, Covington, La.—p. 375.
Psychoneuroses in General Practice. D. H. Duncan, Shreveport, La. —p. 379.
Proteotherapy. J. W. Gray, Clarksdale, Miss.—p. 385.
Acidosis and Alkalosis in Children. G. L. Arrington, Meridian, Miss. —p. 388.
Prognostic Factors in Abdominal Gunshot Wounds. F. L. Loria, New Orleans.—p. 393.
Sterility. J. Cohen, New Orleans.—p. 401.
Suggestions in Physical Diagnosis. O. W. Bethea, New Orleans.—p. 405.

V 96
1931

New York State Journal of Medicine, New York

24: 1461-1526 (Dec. 15) 1930

Control and Treatment of Diabetes. E. P. Joslin, Boston.—p. 1461.
Mass Production and Wholesale Distribution in Medicine. J. H. Gettinger, New York.—p. 1465.
Sudden Blindness. G. Frey, New York.—p. 1468.
Acute Bacterial Infections. H. S. Dunning and others, New York.—p. 1471.
Newspaper Psychiatry: Psychopathologies of Everyday Life. L. J. Bragman, Syracuse.—p. 1479.

Northwest Medicine, Seattle

29: 555-606 (Dec.) 1930

Spontaneous Generation and Filtrable Viruses. T. M. Rivers, New York.—p. 555.
*Pharmacologic Aspects of Preanesthetic Medication. C. D. Leake, San Francisco.—p. 561.
Undulant Fever: Serologic Survey. C. E. Wallace, Tacoma.—p. 566.
Production of Therapeutic Fever by Diathermy. A. C. Jones, Portland, Ore.—p. 570.
Laboratory in Service of Public Health. H. J. Sears, Portland, Ore.—p. 573.
Medical Economics. H. J. Whitacre, Tacoma.—p. 577.

Preanesthetic Medication.—Routine preanesthetic medication is strongly condemned by Leake. So also is scored an undignified rush to aid the clinical exploitation of new commercial agents not yet properly evaluated pharmacologically. Each patient should be separately considered from the standpoint of preanesthetic hypnosis with regard to type of chemical agent to be employed, if necessary at all, dosage and mode of administration. The clinical evaluation of new agents should be left to university or research hospitals, where critical study with proper control methods are most likely to be found. When pain is present, morphine or one of the synthetic analgesics, such as amidopyrine, is indicated as the proper preanesthetic hypnotic. Scopolamine should receive more critical clinical study before its general use can be justified. If no pain is present, proper psychic approach by a skilled anesthetist may satisfactorily remove the average patient's dread of taking an anesthetic. On limited pharmacologic and clinical evidence, barbital by mouth may be suggested as a suitable preanesthetic hypnotic, if psychic approach is ineffectual. There is little indication that any of the numerous commercialized modifications of barbital are superior to the official parent substance in this respect. In certain abnormally fearful or excited patients, or when oral administration is contraindicated, a 3 per cent solution of tribrom-ethyl alcohol, not heated above 40 C., and in doses of about 75 mg. per kilogram of body weight, or the monosodium salt of isoamylethylbarbituric acid in 10 per cent alkaline solution (p_H 9.6) by vein, may be useful in conservative dosage.

Ohio State Medical Journal, Columbus

26: 977-1056 (Dec. 1) 1930

Choice of Anesthetics with Particular Reference to Protection of Patient. H. Cabot, Rochester, Minn., and H. Lamb, Ann Arbor, Mich.—p. 997.
Transitory Type of Diabetes. H. J. John, Cleveland.—p. 1002.
Pathologic Considerations in Glaucoma. A. D. Frost, Columbus.—p. 1008.
Diagnosis of Brain Tumor. H. D. McIntyre, Cincinnati.—p. 1011.
Diagnosis and Control of Undulant (Malta) Fever. P. F. Orr, Perrysburg, Ohio.—p. 1023.

Southwestern Medicine, Phoenix, Ariz.

14: 509-560 (Nov.) 1930

Treatment of Diabetes. F. N. Allan, Rochester, Minn.—p. 512.
Diagnosis and Treatment of Fractures of Transverse Processes of Lumbar Vertebrae. J. B. Hartwell, Colorado Springs, Colo.—p. 517.
Management of Industrial Injuries. C. B. Francisco, Kansas City, Mo.—p. 521.
Treatment of Injuries to Cranial Contents. J. W. Hannett, Gallup, N. M.—p. 523.
Diagnosis and Treatment of Gallbladder Conditions. J. J. Gorman, El Paso, Texas.—p. 528.
Cholecystography. J. W. Cathcart, El Paso, Texas.—p. 531.
Application of American Public Health Association Appraisal Form to Rural Health Work. J. R. Scott, Albuquerque, N. M.—p. 533.
State Tuberculosis Association. C. C. Meachem, Albuquerque, N. M.—p. 536.
Disorders of Pituitary Gland. H. Stiles, El Paso, Texas.—p. 539.
Case of Foreign Body in Pelvic Region. J. R. Shupe, Phoenix.—p. 542.
Fixed Relief in New Mexico. P. S. Fox, New Mexico.—p. 546.
Effect of Quinine on Widal Reaction. E. Bullock, Albuquerque, N. M.—p. 548.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 893-940 (Nov. 29) 1930

*Cardiovascular Syphilis in General Practice. C. F. Coombs.—p. 893.
Normal Structure of Endometrium and Decidua and Menstrual Cycle. J. H. Teacher.—p. 896.
Sodium Amytal and Other Derivatives of Barbituric Acid. L. G. Zerfas.—p. 897.
Comparison of Sodium Amytal and Pernocton as Preanesthetic Hypnotics. E. I. McKesson and K. C. McCarthy.—p. 902.
*Intraperitoneal Gestation with Rectal Hemorrhage. J. Elgood.—p. 903.
*Family Tendency to Tallness of Stature, Obesity and Diabetes. R. S. Allison.—p. 904.
Ultraviolet Light in Treatment of Dull and Backward Child. F. Sugden.—p. 905.

Cardiovascular Syphilis in General Practice.—Coombs emphasizes the fact that aortitis, a distressing and fatal malady in from 10 or 20 per cent of all cases, is the inevitable lot of the patient in whom syphilis is inadequately treated in the early stages. He believes that there is good reason for hoping that the campaign against venereal disease, which has given to every one infected with syphilis an opportunity of early and thorough treatment, may succeed in its object and avert these disastrous sequels; but one cannot be confident of this, and it is therefore the duty of physicians to be ready for an increase in the incidence of cardiovascular syphilis in general practice during the next decade or two.

Intraperitoneal Gestation with Rectal Hemorrhage.—Elgood relates the case of a woman, aged 27, six months pregnant, who was suffering from severe pain in the lower part of the abdomen and bleeding through the vagina. On careful questioning it transpired that her amenorrhea had not been complete. She had had several small attacks of bleeding and a more or less continuous yellowish vaginal discharge. Suddenly she was seized with a violent pain in the left iliac fossa and passed clots through the vagina. The breasts were active. All the lower part of the abdomen was held rigid and was very tender on palpation, especially in the left iliac fossa. Rising from the pelvis was a tumor, reaching almost to the umbilicus and extending over toward the left side of the abdomen. It was nonfluctuant and dull to percussion. A souffle was audible about 1½ inches below the umbilicus but not over the position of the uterine arteries. The uterus was not felt apart from the tumor. The tumor was not felt to contract under the examining hand. Fetal heart sounds were not heard, nor were movements detected. On vaginal examination, clots of blood and a vaginal discharge were found; there was tenderness in the anterior fornix, and the os uteri admitted a finger tip. Bimanually, movements were not transmitted from the swelling to the cervix. An anesthetic was administered, primarily with a view to a more thorough examination. As the patient was being placed in the lithotomy position before the vaginal examination, she passed 20 ounces or more of bright blood by rectum. A rectal examination revealed nothing to account for this. With the abdominal muscles well relaxed the uterus was now felt as a separate entity, lying well to the right side, and enlarged to about twice its normal size. In view of the copious rectal hemorrhage, an immediate laparotomy was performed. Adherent to the abdominal wall below the level of the umbilicus, and above the left broad ligament, was a sac which, when opened, proved to contain an offensive fluid mass of feces, blood and liquor amnii, together with a partially macerated fetus, the whole showing evident signs of infection. The fetus measured 17 cm. from vertex to buttocks and was well formed. The placenta was seen in the left lower aspect of the sac. Severe hemorrhage from large vessels that lay around the placental site and in the wall of the sac negatived any intervention beyond rapid removal of the fetus, marsupialization of the sac, and firm packing. The patient died on the following evening. A postmortem examination was performed. Most of the lower part of the abdomen was found to be occupied with a sac, situated in the abdominal cavity above the left broad ligament, formed by omentum, transverse and descending colon, cecum, and the anterior abdominal wall. The placenta was adherent to the abdominal wall in the region of the left iliac fossa and to the descending colon. A

perforation which admitted a finger connected the sac with the descending colon, and the whole colon and cecum were distended with blood. No other perforation existed.

Family Tendency to Tallness, Obesity and Diabetes.—The family described by Allison consisted of a father, mother, daughter and two sons, the father being a well proportioned man over 6 feet (183 cm.) in height. The mother, aged 44, had had glycosuria since she was 21 years of age. It was mild in character, was associated with obesity, and was readily controlled by dieting. A sugar tolerance test gave a diabetic curve. The children showed a disorder of growth and nutrition. On inquiry, many (eleven out of seventeen) of the relatives of both parents were found to be similarly affected.

Edinburgh Medical Journal

37: 665-743 (Dec.) 1930

*Tuberculosis in Children. A. R. Macgregor.—p. 665.
Acute Pneumonic Phthisis Becoming Chronic, Characterized by Complete Absence of Cough in Acute Stage. A. H. Rintoul.—p. 695.
Hydrophobia. D. M. Greig.—p. 698.

Tuberculosis in Children.—A postmortem analysis of 250 cases of tuberculosis in children under 12 years of age was made by Macgregor. The cases are divided into two groups: those in which tuberculosis was the cause of death (204) and those in which it was "incidental" and not the cause of death (46). The following general conclusions are presented: Latent or quiescent tuberculous lesions are relatively rare in childhood, very rare under 2 years of age, and almost nonexistent under 1 year. Calcified foci are exceedingly rare under the age of 3 years. Tuberculous infection acquired in infancy is usually rapidly progressive and fatal. The mesenteric glands are the commonest site for latent foci. Fatal tuberculosis is much more prevalent during the first two years of life than during the later childhood. A great majority of deaths from tuberculosis under 1 year are due to primary thoracic infections, usually from a human source. Primary abdominal cases are as numerous as thoracic in the second year and exceed them in the third and fourth years. Deaths from primary thoracic tuberculosis show seasonal variation, with an increase in spring and early summer. Abdominal tuberculosis is not subject to this seasonal variation. Lymph glands show important lesions in almost all cases. Most cases with caseous thoracic glands have associated pulmonary lesions, which probably represent the primary infection. Infection of the lungs or thoracic glands from the cervical glands is rare. Infection of the cervical glands (by way of the tonsils, probably) by sputum from open lung lesions is common. Primary thoracic tuberculosis becomes generalized and ends with meningitis in a larger proportion of cases than does abdominal or cervical tuberculosis. In primary thoracic tuberculosis, intestinal ulceration is often present without demonstrable open lesions in the lungs. Fatal tuberculous peritonitis is much more often of "plastic" than of "ascitic" type. Meningitis is comparatively rare in cases of generalized tuberculous peritonitis. Infection spreading to the thorax from tuberculous peritonitis frequently involves the internal mammary and anterior mediastinal glands. Primary cervical lymphadenitis comparatively seldom gives rise to generalized and fatal infection or to progressive lesions within the thorax. Sixty-six per cent of all the "fatal" cases in this series ended with meningitis. There has been a relative increase in meningitis during the past twenty-five years. Meningitis may occur as the only delectable tuberculous lesion in the body, but this is very rare. Dissemination of infection by the blood is very common in children and tends to be widespread and fatal, but it may be of limited extent and may occur periodically during the course of any case.

Lancet, London

2: 1167-1220 (Nov. 29) 1930

Ocular Muscles, Movements and Judgments. J. H. Fisher.—p. 1167.
*Medical Treatment of Anthrax. C. G. Brentnall.—p. 1174.
*Urinary Creatinine as Test of Renal Efficiency. A. M. Crawford.—p. 1177.

Medical Treatment of Anthrax.—Brentnall compares the combined surgical and serum treatment of cutaneous anthrax, and of medical treatment alone, and shows that recovery is quicker by the latter method. This comparison is made from cases that all occurred in the same district, under much the same conditions of infection as regards site and severity. The treatment consisted of the injection of antianthrax serum and neoarsphenamine and other arsenic preparations.

Urinary Creatinine as Test of Renal Efficiency.—During the past two years, Crawford has investigated the creatinine excretion in numerous cases of nephritis. He found that in acute nephritis the creatinine output may be normal or diminished. In those cases showing a definite diminution, the output rises as the acute stage passes off if the case is pursuing a favorable course. If, on the other hand, the clinical features point to the development of a chronic condition, the output shows either a steady decline or a failure to rise to the high level usually found in favorable cases. In subacute nephritis—i. e., large white kidney with persistent edema and albuminuria—a low creatinine output, though not necessarily of grave prognostic significance at the time of examination, probably indicates serious damage to the kidneys and the early development of cirrhotic changes. In established chronic nephritis, especially in cases of cardiovascular and eye changes, the creatinine output may be taken as a reliable prognostic guide. In severe cases with impending uremia the output is excessively low. In cases that terminated fatally, the creatinine output was abnormally low and the prognosis, on purely clinical grounds, was never in doubt. The test is regarded as confirmatory, or perhaps even as a measure, of the degree of renal damage, even though it might appear to be superfluous in advanced chronic cases. In early chronic cases, on the other hand, in which the clinical features are not sufficiently well developed to allow of an accurate prognosis, it is suggested that the test would be of some help in the endeavor to assess the degree of structural or functional renal damage.

Archives des Maladies du Cœur, etc., Paris

23: 625-688 (Oct.) 1930

Hemorrhagic Diphtheria and Postseroatherapeutic Purpura. J. Sabrazès.—p. 625.
Primary Tumors of Heart. R. Leriche and R. Bauer.—p. 645.
*Arterial Hypotension. Wasserthal.—p. 657.

Arterial Hypotension.—Wasserthal reviews the literature in which a number of authors have attempted to formulate definite syndromes for conditions of idiopathic arterial hypotension. Because of the general interest in this subject he observed the cases of hypotension that came to his attention during a period of twenty years. The cases have been especially numerous since the World War. In trying to formulate conclusions he carefully eliminated cases of hypotension that were clearly due to anatomic, functional, constitutional or hereditary factors, to intoxications or traumatisms, or to disturbances in endocrine secretion. There remained a large number of cases of hypotension for which no cause could be determined and which often occurred in persons in perfect health. The hypotension in these cases was entirely without pathologic consequences and did not affect the normal life of the patients in any way. The author calls particular attention to the fact that many of the persons in whom hypotension was observed participated regularly in sports with no unpleasant results, which is a further proof of the benignity of the condition.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

(54): 1529-1562 (Nov. 3) 1930

*Clinical Evolution and Therapy in Severe Case of Tetanus. G. Guillain and S. de Sèze.—p. 1530.
*Normal Protein Content of Blood in Acute Nephritis with Anasarca: Effects of Intravenous Injection of Hypertonic Solution of Sodium Chloride. P. Abrami, R. Wallich and R. Worms.—p. 1536.
Treatment of Profuse Hemorrhage by Repeated Transfusions: Necessity for Organization of Emergency Blood Transfusion Service. A. Tzanck, Weismann-Netter and J. Dalsace.—p. 1541.
Minimal Diphtheria. C. Zœller.—p. 1543.
Differential Diagnosis Between Intraspinal Tumors and Pott's Disease. G. Kapsalas.—p. 1548.
Tetanus: Treatment by Intraspinal Injection of Serum Under Chloroform Anesthesia. P. Pagniez, A. Plichet and E. Bompard.—p. 1552.
Spontaneous Cure of Pulmonary Hydatid Cyst by Hydatid Vomica. D'Elsnitz and E. Carcopino.—p. 1556.

Treatment of Severe Case of Tetanus.—Guillain and de Sèze report a severe case of tetanus caused by a rusty nail. The disease developed rapidly with generalized contractions of the four limbs, persistent trismus, frequent and intense paroxys-

V 96
1931

mal attacks, high fever and a rapid pulse. The patient was cured by the following treatment: 1. Surgical incision was made of the original wound caused by the nail. 2. From 150 to 250 cc. of antitetanus serum was given each day in subcutaneous injections. The authors advise giving as large doses of the serum and as many injections as are necessary in such cases. 3. Each morning and evening the patient was given an hypnotic. Each day, moreover, a general anesthesia of an hour's duration was induced by chloroform. During the anesthesia intraspinal injections of antitetanus serum were given the first two days. In the middle of the night one or two injections of 0.01 Gm. of morphine hydrochloride were given. The authors emphasize the importance of this part of the treatment, since it is essential to enable the patient to sleep and relax. 4. Because the patient was unable to swallow for some time, which resulted in severe dehydration, 2 liters of physiologic solution of sodium chloride and 1 liter of a 40 per cent solution of dextrose were injected daily. A nurse kept the patient's lips constantly moistened with wet cotton and attempted to force a few drops of water into his mouth. The authors emphasize the fact that throughout the entire evolution of the disease constant care must be given the patient if even the most efficient therapeutic methods are to be successful.

Protein Content of Blood in Acute Nephritis.—Abrami et al. report a case of acute nephritis with anasarca in which the protein content of the blood remained normal and the edema was evidently caused by a retention of water and chlorides. This is in direct opposition to Govaerts' laws, which attribute nephritic edemas to a diminution of the protein content of the blood and to modifications of the proportions of serum albumin and globulin. The patient in this case was completely cured by a dechloridized diet. The case convinced the authors that there is not necessarily a parallelism between the protein content of the blood and nephritic edemas and that the modifications of the protein content are merely an accessory syndrome. They gave experimental injections of a hypertonic solution of sodium chloride to patients with nephritic edemas and also to normal persons. In the cases of edema in which the protein content of the blood was already lowered the diminution was exaggerated. In cases such as the one reported, in which the protein content was normal, a diminution was produced by the injection of sodium chloride. In normal persons, however, and in patients cured of edema the injection had no effect on the protein content of the blood.

Revue Française de Pédiatrie, Paris

6: 593-720, 1930

Dosage of Viosterol. P. Rohmer and R. Dubois.—p. 593.
*Influence of Vitamin A on Action of Viosterol in Rickets. P. Rohmer and R. Dubois.—p. 604.
Alimentary Ration of Premature and Weak Infants. P. Rohmer and T. S. Sanchez.—p. 609.
*Coagulability in Vitro of Blood of Nurslings. L. Ribadeau-Dumas, L. Rouquès and Nigay-Petibon.—p. 624.
Hypercoagulability of Blood in Thrombosing Infections of Nurslings. Ribadeau-Dumas, L. Rouquès and Nigay-Petibon.—p. 643.
Total Tonsillectomy in Children. G. Canuyt.—p. 653.

Influence of Vitamin A on Action of Viosterol in Rickets.—Rohmer and Dubois conducted a series of experiments to determine whether vitamin A exerts an influence on the evolution of rickets when used in connection with treatment by viosterol. Six rachitic children were given either the minimum effective dose or an insufficient dose of viosterol (from 300 to 600 rat units a day). They were also given daily doses of 3,000 rat units of vitamin A. The addition of the large doses of vitamin A did not modify the action of the viosterol in any way. The clinical symptoms, results of roentgen examination and analysis of the blood corresponded with those normally obtained by small doses of viosterol.

Coagulability in Vitro of Blood of Nurslings.—Ribadeau-Dumas et al. made a study of the coagulability in vitro of the blood of nurslings. The blood was taken by puncture of the superior sagittal sinus. They used a tube that was first sterilized by heating to dark red, and an incubator in which water was kept at a temperature of 37 C. by means of a Bunsen burner. This method had given remarkably constant results when used in testing the blood of adults. The authors first examined the blood of five infants during a period of fasting at regular intervals throughout the day; no perceptible change was found in the coagulation rate at different times. They then examined twenty nurslings (one was examined at two different times) who were given nourishment every three hours and whose blood was tested before each meal, as often as possible during the three hours following the meal, and again just before the next meal. In eleven cases no variation in the coagulation rate was observed during digestion. In ten cases a more or less marked variation was noticed during digestion, three times a diminution in the time required for coagulation, six times an augmentation, and once a slight augmentation followed by a more pronounced diminution. Of the ten infants whose coagulation rate was modified by the digestive process, four were ill. The authors are not convinced, therefore, that the rate of coagulation is modified under the influence of digestion. They then studied the blood of a number of children in order to determine the variations in the coagulation rate with reference to age. They observed that during the first fifteen days after birth the coagulability of the blood is higher than that of adults; in thirty-five cases out of forty-five, the blood coagulated in less than four minutes. From the third week of life the coagulation rate was found to be practically the same as in adults (between four and five minutes). The authors could detect no difference between the coagulability of the blood in prematurely born infants and those born at term. They attempted to determine the modifications produced in different pathologic conditions but were unable to find variations of any significance in the cases they observed of congenital syphilis, tuberculosis, diphtheria, influenza, bronchial pneumonia, thrombosing infections, and digestive disturbances.

Archivio Italiano di Urologia, Bologna

6: 541-660 (Oct.) 1930

Significance of Enervation of Renal Pedicle and Ureter in Production of Dilatations of Upper Urinary Tracts. V. Raffo.—p. 541.
*Primary Cancer of Ureter in Initial Stage: Case. R. Ascoli.—p. 611.
*Essential Hematuria. R. Rinaldi.—p. 624.
Pararenal Tumors. A. Romani.—p. 646.

Primary Cancer of Ureter in Initial Stage.—Ascoli emphasizes that in the presence of hematuria of a neoplastic type, when it is necessary to differentiate between the two important sites of neoplasms of the urinary apparatus, kidneys and urinary bladder, more thought should be given to the possibility of ureteral cancer than is commonly done. He describes briefly a case that recently came under his observation, which was of particular interest, as it was the initial stage of the malignant neoformation.

Essential Hematuria.—Rinaldi makes the following classification of renal hematurias: (1) hematurias of clearly evident nephritic origin; (2) nonnephritic but symptomatic hematurias, of evident renal causation (traumas, calculosis, tuberculosis, tumors); (3) symptomatic hematurias pointing to an evident hemorrhagic diathesis; (4) hematurias of renal origin in which a latent blood defect is present or in which minimal nephritic lesions are discoverable, developing in a particular vascular area, and (5) cryptogenic hematurias. The author discusses these five groups in considerable detail.

Chirurgia degli Organi di Movimento, Bologna

15: 291-396 (Oct.) 1930

Scoliosis and Myelitis Due to Compression. R. Zanoli.—p. 291.
*Remote Results of Reconstruction of Anterior Crucial Ligament and External Lateral Ligament of Knee Joint by Use of Aponeurotic Flaps. D. Vallone.—p. 308.
Anomaly of Styloid Process of Ulna. G. Corsi.—p. 318.
Traumatic Lesions of Certain Bones of Wrist. D. Soli.—p. 326.
Central Abscess of Bone. A. Romani.—p. 347.
Localization of Echinococcus in Bone Tissue. E. Pasquali.—p. 355.
Changes in Body Weight of Patients with Tuberculosis of Bones and Joints, Under Sanatorium Treatment. S. Vacchelli.—p. 381.
Chondromatosis of Astragalotibial Articulation. A. Oliete.—p. 389.

Reconstruction of Ligaments of Knee Joint by Aponeurotic Flaps.—Vallone's observation of the results of the reconstruction of the anterior crucial ligament and of the external lateral ligament, by means of aponeurotic flaps, causes him to affirm, first, that the reconstruction of certain ligaments of the knee joint with flaps of fascia lata gives excellent functional and static results, and, second, that the method is indicated and applicable to the reconstruction of the anterior crucial ligament that will prevent the rubbing of the tibia on the femur.

Giornale di Clinica Medica, Parma

11: 981-1044 (Oct. 10) 1930

*Cytologic Observations on Blood in Acute Articular Rheumatism. G. Piccoli.—p. 981.
Oculomotor Crises Associated with Epileptoid Attacks in Postencephalitic Parkinsonism. D. Soli.—p. 999.
Taxonomic Criteria in Field of Hydrology. P. Piccinini.—p. 1011.

Cytologic Observations on Blood in Acute Articular Rheumatism.—Piccoli gives the results of cytologic examinations of the blood of forty soldiers with acute articular rheumatism, carried out systematically in the various phases of the disease. The average number of erythrocytes found in healthy soldiers 20 years of age is 5½ million, instead of 5 million, as is commonly reported. While there is a marked destruction of red corpuscles, there is a large number of new erythrocytes constantly coming into the circulation. The hemoglobin diminishes with the decrease of the red corpuscles and is more slowly reestablished. There is a moderate leukocytosis. The leukocyte picture is peculiar, presenting at the peak a prevalence of neutrophil granulocytes, with a loss of lymphocytes and a relative increase of monocytes. With the beginning of convalescence, the author observed a slight increase in the percentage of lymphocytes at the expense of the neutrophil granulocytes. An increase of eosinophil cells attended the beginning of convalescence. The forms more easily treated and less likely to present recurrences are characterized by marked eosinophilia.

Policlinico, Rome

37: 1549-1584 (Oct. 27) 1930. Practical Section

*Botelho's Test. T. Calzolari.—p. 1549.
Grave Syncope Due to Anesthesia Overcome by Double Intracardiac Injection of Epinephrine. G. Ballati.—p. 1552.

Botelho's Test.—Calzolari applied the Botelho test in patients with various disorders and secured nearly always positive results in types of malignant tumors. He does not think that the reaction is due to an increased azotemia and concludes that the Botelho test is a supplementary diagnostic aid of considerable value, although he does not ascribe a specific character to it.

Prensa Médica Argentina, Buenos Aires

17: 761-804 (Oct. 30) 1930

Congenital Motility of Duodenum Associated with Gastric, Duodenal or Gallbladder Disturbances. P. A. Maissa.—p. 761.
Variations of Lipemia in Different Clinical Forms of Pulmonary Tuberculosis. M. Estiú, R. B. Esquivel and G. M. Gramajo.—p. 771.
*Influence of Suprarenals on Growth of Tumors. A. H. Roffo.—p. 776.

Influence of Suprarenals on Growth of Tumors.—In order to ascertain the influence that the suprarenals may have on the development of tumors, Roffo made inoculations of tumors after unilateral or bilateral removal of the suprarenals and also inoculations of the same type of tumors (sarcoma and carcinoma) in animals treated by the administration of products extracted from either the cortical or the medullary substance of the suprarenals (proteins and lipoids with or without epinephrine) both before and after the inoculations. The experiments disclosed a manifest influence of the suprarenals on the development of tumors. The inoculation of tumors in rats five days after removal of one suprarenal was not so successful, in relation both to the number of tumors produced and to the size of the tumors, as it was in control animals. The diminution of the propensity for the development of tumors was more marked in animals that had been subjected to bilateral removal of the suprarenals, especially if the inoculation of tumors was made the twelfth day after removal of the suprarenals. Animals treated with suprarenal products received the treatment (proteins or lipoids from either the cortical or medullary substances and with or without their content of epinephrine) both before and after the tumor inoculation. The results obtained pointed out the following: Lipoids from the suprarenal cortex, without epinephrine, have a more favorable action on the development of tumors than do proteins from the same place and also without epinephrine. The same is true in a comparison between the lipoids and the proteins from the suprarenal medulla without epinephrine. In both cases the cancerogenic action is more marked if the lipoids retain their content of epinephrine. Among lipoids from the suprarenal cortex and from the suprarenal medulla deprived of epinephrine the last mentioned have a more marked action on the development of tumors. In a comparison of the lipoids from the suprarenal cortex and those from the suprarenal medulla with epinephrine, the last mentioned have the most marked action.

Deutsche medizinische Wochenschrift, Berlin

56: 1855-1896 (Oct. 31) 1930

Various Views Regarding Harmlessness of B C G Vaccine. R. Kraus.—p. 1855.
*Self-Massage of Vessels by Patients Confined to Bed and by Convalescents: Prevention of Thrombosis. A. Böttner.—p. 1858.
*Influence of Hypnotics on Basal Metabolism in Exophthalmic Goiter. A. Bornstein.—p. 1861.
Twenty-Five Years' Experiences in Cesarean Operations. J. W. Williams.—p. 1862.
Housing Conditions in Germany. E. Friedberger.—p. 1866.
Milk Sugar not Resorbed by Skin. E. E. Bauke.—p. 1869.
*Experiences with Gerson-Herrmannsdorfer Diet in Treatment of Tuberculosis of Bones and of Joints. E. Pawlowski.—p. 1870.
Blood Transfusion in Children by Means of Jubé's Syringe. H. Willi.—p. 1872.

Self-Massage of Vessels by Patients Confined to Bed: Prevention of Thrombosis.—Böttner directs attention to Franke's vascular gymnastics or self-massage of the vessels. Franke's method consists in a repeated emptying and filling of the vessels. This is accomplished by elevation of the arms and legs. In contradistinction to the ordinary methods of massage in which a massage effect is produced by pressure from the outside, this method stimulates the vascular elasticity by the blood stream itself. Thus not only the surface tissues are stimulated but also the deeper tissues. At the same time the metabolic waste products are discharged more quickly, and the circulation in the venous, capillary and lymphatic systems is accelerated. Franke recommended an alternating lifting of the upper and lower extremities four or five times in succession, and advised that this procedure be repeated three times a day. But because this method is somewhat too strenuous for patients confined to bed, the author modified it. Because the arms are usually moved sufficiently without special exercises, spontaneous thrombus formation in the arms is rare. However, it is necessary to prevent thrombus formation in the lower extremities. In order to retain the normal elasticity the author advises that the legs should be elevated for from five to ten minutes three or four times every day. He considers this method advisable particularly in patients with cardiac decompensation, in infectious diseases, in sepsis, following operations, during the puerperium and in patients with varicose veins. In the conclusion it is pointed out that this form of self-massage helps to retain the vascular and bodily elasticity while the patient is confined to bed and by this the convalescence is shortened.

Influence of Hypnotics on Basal Metabolism in Exophthalmic Goiter.—Bornstein tested the basal metabolism of healthy persons and of patients with exophthalmic goiter, following the administration of various sleep inducing medicaments. His experiments revealed that the cause of the increased basal metabolism in patients with exophthalmic goiter has two components, a nervous and an organic. The increase in the basal metabolism that is due to nervous factors can be overcome by hypnotics. However, the increase that is due to organic conditions persists during sleep. The latter increase is probably caused by the direct action of the thyroid toxins on the oxidation processes in the entire organism, whereas the increased metabolic rate which can be overcome by hypnotics is indirect in that the thyroid toxins cause a condition of irritation in the central nervous system and this in turn increases the already heightened metabolic rate.

Gerson-Herrmannsdorfer Diet in Treatment of Tuberculosis of Bones.—Pawlowski employed the Gerson-Herrmannsdorfer diet in the treatment of sixty-four girls with tuberculosis of the bones or joints. In order to control the efficacy of the diet, ninety-four boys received normal diet. Marked differences in the healing tendencies in the two groups were not observed. Because the diet did not effect the desired results, it was discontinued. With the usual dietetic and other therapeutic measures, the same successes and failures were obtained. The author concludes that the favorable results which are obtained with the Gerson-Herrmannsdorfer diet are probably due to the medication with cod liver oil and to the high vitamin content of the diet.

V 96
1931

Deutsche Zeitschrift für Chirurgie, Leipzig

228: 331-426 (Oct.) 1930

Effect on Red and White Blood Corpuscles of Intravenous Injection of Anisotonic Solutions. M. Ernst.—p. 331.
Experimental Study of Surgical Shock. F. Metzler.—p. 340.
Pathogenesis of Traumatic Shock: Experimental Study. G. Alipov.—p. 349.
*Results of Splenectomy. Mühlbradt.—p. 365.
*Function of Spleen as Studied with Roentgen Ray. T. Naegeli and C. von Scanzoni.—p. 397.
Effect of Denervation, Ligation of Arteries and Splenectomy on Peripheral Blood Picture. T. Naegeli and K. Reinbeld.—p. 404.
Splenectomy in a Case of Complete Transposition of Viscera. J. Daniljak.—p. 406.
*Actinomycosis of Scrotum. H. Köhler.—p. 408.
Administration of Anisotonic Solutions in Treatment of Uremia. M. Ernst.—p. 410.
Oligodynamic Action of Metals. B. E. Brüda and W. M. Kreiner.—p. 415.
*Reticulo-Endothelium and Homeotransplantation: Favorable Effect of Roentgen Ray on Growth. B. E. Brüda and W. M. Kreiner.—p. 421.

Results of Splenectomy.—Mühlbradt states that experiments have shown that extirpation of the spleen, whether diseased or not, does not affect the bodily economy unfavorably. Furthermore, certain conditions call for its removal. It is not only indicated but urgent, even if only temporary improvement follows such removal. Splenectomy has a stimulating effect on the bone marrow, and the result may have an extremely good effect on the course of the primary disease for which the spleen was removed. He has removed the spleen fifteen times: once for lymphogranulomatosis of the spleen, twice for rupture, once for aleukemic myelosis, thrice for Banti's disease, four times for hemolytic icterus, thrice for pernicious anemia, and once for chronic essential thrombopenia. The mortality was 40 per cent. The cases of Banti's disease did well; pernicious anemia was not affected notably one way or another; the result was good in the case of aleukemic myelosis, and in the case of essential thrombopenia the result thus far has been decidedly good.

Roentgen Study of Spleen Function.—With the aid of a contrast medium injected into the ear vein or the heart of rabbits, Naegeli and von Scanzoni have studied the effect of various agencies and substances on the function of the spleen. Submerging the animal in ice cold water for forty-five minutes or placing it in a hot air chamber caused a marked reduction in the size of the spleen. After the animal is bled, the spleen diminishes in size and regains its original size slowly thereafter, unless physiologic solution of sodium chloride is injected. In that case the spleen quickly regains normal size. Fasting eight days, resulting in a loss of about one fifth of the body weight, does not reduce the size of the spleen perceptibly. Chloroform and ether, administered in large quantities and for long periods of time, even to the point of asphyxiation, had no effect on the size of the spleen; neither did carbon monoxide (fatal poisoning). Epinephrine caused reduction in size; extract of posterior lobe of the pituitary had no appreciable effect. Filling the abdominal cavity with solutions of various substances did not change the size of the spleen except in the case of procaine hydrochloride to which some epinephrine was added. Ligating the splenic artery reduced the size of the organ; sympathectomy of the splenic artery (done on the dog) increased its size considerably. The authors are continuing their work as they are convinced that it will yield some important data.

Actinomycosis of Scrotum.—Köhler reports the case of a teamster conveying straw and oats who was suffering from an intertrigenous eczema of the scrotum which became the portal of entry for the actinomyces. He did not complain of any subjective symptoms, merely of discomfort when seated. The resulting tumor was about the size of a man's thumb and was situated exactly in the middle of the scrotum behind the medial raphe. The tumor was removed surgically and large doses of potassium iodide were ordered. The patient made a complete recovery.

Effect of Roentgen Ray on Ovarian Transplants.—Brüda and Kreiner removed the ovaries from healthy young rats after having irradiated them previous to operation. Then these ovaries were implanted into other healthy female rats, and the area of the implant was irradiated with the roentgen ray. Careful studies were made as to estrus in order to determine whether the roentgen ray had exerted any effect on the implant. As a result of these studies it is concluded that it had an effect, a favorable one, and it is suggested that ovarian implants be irradiated because such raying favors the embodiment of the implant in the tissues and also favors a continuation of its function.

Monatsschrift für Kinderheilkunde, Leipzig

48: 193-384 (Oct.) 1930

*Myeloid Leukemia in Children. H. Opitz.—p. 193.
*Herrmannsdorfer Diet in Tuberculosis in Children. H. Schmiedeberg.—p. 230.
Changes in Basal Metabolism in Diabetes in Children. Beck.—p. 256.
Herrmannsdorfer Dietary Treatment of Tuberculosis: Theoretical Basis. O. Beck.—p. 276.
*Paroxysmal Tachycardia in Children. B. Essig.—p. 288.
*Angina with Lymphatic Reaction in Nursling. G. Lewin.—p. 300.
*Thrombosis of Renal Vein. E. Faerber and R. Bussel.—p. 304.
Hypertrophic Stenosis of Pylorus: Surgical Treatment. R. Hess.—p. 311.
*Convulsions in Infants. P. Leitner.—p. 323.

Myeloid Leukemia in Children.—Opitz gives the clinical histories of seven cases of myeloid leukemia in children. All the patients presented unusual manifestations. In the first one there were urticarial and vesicular eruptions and the latter had led to a diagnosis of smallpox. In the second there were no ulcerative changes in the mouth. In the third the blood examination revealed a predominance of atypical promyelocytes, many of which could not be differentiated from the monocytes. In the fourth there was a divergence between the clinical and the hematologic observations. In the fifth the disease was extremely chronic but the blood changes resembled those of the acute form. In the sixth it was possible to follow the development of the disease from its earliest stage. In the seventh the blood picture resembled the blood picture of chronic leukemia in adults. From a study of the cases it is evident that in children there may be no distinct morphologic differences between acute and chronic myeloses. Leukemia in children is characterized by the frequency of cutaneous manifestations.

Herrmannsdorfer Diet in Tuberculosis in Children.—Schmiedeberg has used the Herrmannsdorfer diet during the past two years in the treatment of a large number of children with tuberculosis of the bronchial lymph nodes (with or without concomitant scrofulous manifestations in the skin), with pulmonary tuberculosis, and with multiple foci of tuberculosis in the bones and lymph nodes. He summarizes his results thus: The Herrmannsdorfer diet may be used even with infants just beyond the nursling age. However, at least one half of all the children who were placed on the diet lost their appetite after a short time and refused to follow the diet. The best results were obtained in children aged 3 or 4 and 13 or 14 years. In tuberculous children with scrofulous manifestations in the skin the latter sometimes underwent marked retrogression but frequently they did not and in the severe cases corneal infiltrations were not improved. In perifocal inflammations and in tuberculosis of the bronchial lymph nodes not accompanied by scrofulous manifestations in the skin the results were unsatisfactory. In pulmonary tuberculosis the effects of the diet were negligible. Even in a case of multiple tuberculous abscesses and fistulas, a condition which Herrmannsdorfer considers particularly susceptible to treatment by his diet, there was no improvement noted in any case.

Paroxysmal Tachycardia in Children.—Essig tabulates the thirty-five cases of paroxysmal tachycardia in children that have been reported in the literature and on the basis of a study of all the cases discusses the etiology and prognosis of the condition. To the cases already reported he adds one observed personally in a boy, aged 10. The cause of the paroxysmal tachycardia in this case was a myocarditis of unknown origin accompanied by moderate enlargement of the heart. The boy was under observation eight and one-half months and it was thought that the myocarditis had become stationary. Several weeks later, however, while playing in the street after having taken a short walk, the patient, who at the time had been feeling perfectly well, suddenly collapsed and died. The author believes that the collapse was caused by a sudden complete failure of the conduction system.

Angina with Lymphatic Reaction in Nursling.—Lewin reports a case of severe lacunar angina with lymphocytosis in a nursling aged 5 months. Examination of the pharynx revealed

nonconfluent membranes, ranging in size up to a pea, on the greatly enlarged tonsils and on the uvula. Examination of the blood disclosed a leukocyte count of 18,000 with 70 per cent lymphocytes. Approximately one half of the lymphocytes were of the large immature form.

Thrombosis of Renal Vein.—Faerber and Bussel report a case of thrombosis of one renal vein in a child aged 2 years. From their observations in this case they believe that it is not always possible to diagnose renal vein thrombosis on the basis of hematuria, sediment observations, oliguria, anuria and uremia. Likewise in the etiology of the condition too much importance has been attached to nutritional disturbances in the form of diarrhea and vomiting and not enough to cardiac weakness and infection.

Convulsions in Infants: Treatment.—Leitner calls attention to the fact that the treatment of convulsions in infants by means of the rectal administration of chloral hydrate has frequently proved ineffective. He has obtained excellent results in the treatment of this condition in a large number of nurslings and small children by means of subcutaneous injections of phenobarbital sodium. A case of acute intoxication with hyperpyrexia and convulsions in an infant aged 1 year is reported in which chloral hydrate was without action but a subcutaneous injection of 0.02 Gm. of phenobarbital sodium was followed immediately by a complete cessation of the convulsions. The infant went to sleep ten minutes after having received the injection and slept for four hours. When he awoke he was given 15 Gm. of castor oil and three hours later he passed a large amount of feces; shortly afterward the temperature returned to normal. In his use of subcutaneous injections of phenobarbital sodium the author has never observed a local reaction or pain at the point of injection or any other deleterious effects as circulatory disturbances or renal irritation. He recommends the following doses: in infants up to 3 months 0.01 Gm., up to 6 months from 0.01 to 0.02 Gm., up to 12 months from 0.015 to 0.03 Gm. and in children aged from 2 to 6 years from 0.03 to 0.05 Gm. Emphasis is laid on the fact that only freshly prepared phenobarbital sodium solution should be used.

Münchener medizinische Wochenschrift, Munich

77: 1829-1876 (Oct. 24) 1930. Partial Index

*Reply to Unfavorable Criticisms Regarding Dietary Treatment of Tuberculosis. V. Sauerbruch and A. Herrmannsdorfer.—p. 1829.
*Dietary Treatment of Tuberculosis. B. Köhler.—p. 1832.
Disturbances in Gaseous Exchange in Lungs Caused by Decreased Permeability of Alveolar Wall. R. Schoen.—p. 1836.
Relation Between Pigmentary Syphilid and Suprarenal Insufficiency. A. D. Troitzkaja.—p. 1839.
Sympathetic Centers. E. Herzfeld, K. Kroner and R. Krüger.—p. 1841.
Experiences with the Ecbolic Factor Extracted from Posterior Lobe of Hypophysis. H. Nahmmacher.—p. 1843.
*Effective Treatment of Diabetes Insipidus with Corpus Luteum Extract. K. Meyer-Nobel.—p. 1844.
*Rare Complications Resulting from Treatment with Phenobarbital. A. Kreindler and E. Cohen.—p. 1844.
Treatment of So-Called Atheromas (Epidermoids). S. Levy.—p. 1845.
Treatment of Bronchiectasis During Childhood. R. Nissen.—p. 1849.
Successful Treatment of a Case of Echinococcus Infection of Lungs with Roentgen Rays. Menna ten Doornkaat Kolman and F. Waliuski.—p. 1852.
Effects of Silver Preparations on Deeper Layers of Skin and of Mucous Membrane. L. Neumayer.—p. 1853.
Irradiation of Sarcoma of Rats by Means of Short Waves. E. Pflomm.—p. 1854.

Reply to Criticisms Regarding Dietary Treatment of Tuberculosis.—Sauerbruch and Herrmannsdorfer discuss the unfavorable criticisms of their dietary treatment for tuberculosis, which recently appeared in the medical literature. They show that some of the authors who reported negative results did not continue their observations for a sufficient length of time. Some of those who did note improvement ascribed the favorable effects either to "psychologic" influences, or to change of surroundings, better foods, better care and better hygienic conditions in general. The authors emphasize that in the evaluation of a therapeutic method for tuberculosis a certain restraint is advisable. The changeable course of the disease, the frequently unforeseen changes, favorable or unfavorable, show the necessity for precaution in the evalution of a therapeutic method. The authors also stress that their dietary treatment should be considered neither as a specific therapy nor as a panacea, but rather as an aid that had been neglected in the past, as an adjuvant which, like the climatic therapy, influences the entire organism. In both these therapeutic methods one may find favorable effects and also complete failures. It has also been stressed that in dietary treatment, just as in any other therapeutic method, there are indications for and against. Moreover, even if the dietary treatment should prove helpful only in tuberculosis of the skin, bones and joints, this would be a great gain.

Dietary Treatment of Tuberculosis.—Köhler thinks that the theoretical foundations of the dietary treatment of tuberculosis are as yet not entirely understood. However, it has been demonstrated that certain factors of the diet, such as the high vitamin content, the cod liver oil and the mineral salts, have a favorable effect on the course of tuberculosis. The evaluation of this dietary treatment can be based only on clinical observations that have to be made in a sufficiently large number of cases and during a long period of time. In the surgical clinic in Munich, 200 patients were observed in the course of the last two years. On the basis of these observations the author reaches the conclusion that the diet has a therapeutic effect on lupus and on tuberculosis of the skin. In tuberculosis of the bones and of the joints the results are favorable in cases of minor and of medium severity. Serious, suppurative cases with mixed infections and with profuse secretions are rarely influenced by the diet. With regard to patients with pulmonary tuberculosis, it is stated that the time is as yet too short to reach a definite conclusion. The author stresses that the dietary treatment can be successful only if the kitchen management is competent to follow the rules of the diet. If the diet is employed in cases of surgical tuberculosis, the surgical treatment should not be neglected.

Treatment of Diabetes Insipidus with Corpus Luteum Extract.—Meyer-Nobel describes the clinical history of a woman with hypochloremic diabetes insipidus and with disturbances in the functioning of the ovaries. Because it has been proved by several authors that a relation exists not only between the anterior lobe of the hypophysis and the ovaries, but also between the posterior lobe of the hypophysis and the ovaries, the author attempted to counteract the dysfunctioning of the posterior lobe by the administration of a corpus luteum preparation. He obtained a considerable improvement.

Rare Complications from Treatment with Phenobarbital.—According to Kreindler and Cohen, an exanthem is the most frequent complication during treatment with phenobarbital. However, they also observed other complications. In one group of patients they noted that tendon and periosteum reflexes disappeared in the course of a phenobarbital treatment for chorea. In another group of patients, disturbances in the functioning of the bladder became manifest. Several case reports are given and then the underlying causes of these manifestations are discussed. The authors come to the conclusion that phenobarbital, as a result of its predilection for certain regions of the brain, reduces the proprioceptive reflexes of the skeletal muscles as well as of the muscles of the urinary bladder.

Wiener klinische Wochenschrift, Vienna

43: 1333-1364 (Oct. 30) 1930

New Tendencies in Therapy of Diseases of Blood. N. Jagić.—p. 1333.
*Influence of Brain Extracts on Blood Pressure. A. Leimdörfer.—p. 1336.
*Influence of Ergotamine and of Liver Diet on Functioning of Liver. R. Bauer and O. Wozasek.—p. 1337.
Cancerous Degeneration of Papilloma of Vaginal Stump. H. Nevinny.—p. 1341.
Tuberculosis in Infants. S. Feilendorf.—p. 1343. C'td.
Treatment of Perirurethral Infiltrates by Means of Iontophoresis and Iontothermy. H. Hirsch.—p. 1347.
Tuberculous Pleurisy: Its Cause, Various Forms, Prognosis and Treatment. J. Donath.—p. 1347.
Constitutional Predisposition to Tuberculosis. O. Satke.—p. 1348.

Influence of Brain Extracts on Blood Pressure.—Leimdörfer directs attention to the fact that administration of extract from the posterior lobe of the hypophysis increases the blood pressure considerably. Investigators who experimented with extracts from the entire brain of dogs observed a slight increase in the blood pressure. The author made experiments to determine whether extracts from certain portions of the brain had an effect on the blood pressure. He experimented with tissue from the cerebral cortex, from the floor of the fourth ventricle,

from the ventral part of the midbrain, and from the basal ganglions. He prepared acetone, ethereal and aqueous extracts. The blood pressure experiments were made on anesthetized cats that had been given an injection of 0.5 cc. of one of the brain extracts into the jugular vein. It was found that aqueous and ethereal extracts of the various parts of the brain influenced the blood pressure only slightly. Injection of acetone extracts of tissue from the cerebral cortex and from the floor of the fourth ventricle likewise caused only slight changes in the blood pressure. On the other hand, injections of acetone extracts from the ventral part of the midbrain caused a marked decrease in the blood pressure, but the animals gradually recovered and the pressure became almost normal again. However, injection of acetone extract of the basal ganglions caused such a rapid decline in the blood pressure that the animals died. It has as yet not been definitely determined whether the extracts exert their influence by their action on the central nervous system, on the heart, or on the peripheral vessels. The substances in the acetone extracts of the midbrain and of the basal ganglions that cause the decrease in blood pressure has likewise not been determined. The assumption that histamine and choline are the active factors is not tenable because these substances are present also in the other extracts that do not have the same effect. On the basis of his experiments the author concludes that the basal ganglions have a regulatory influence on the blood pressure by way of chemical action. This influence is restraining, and disturbances in this portion of the brain may cause either hypotension or hypertension.

Influence of Ergotamine and of Liver Diet on Liver.—Bauer and Wozasek report experiments which show that an injection of ergotamine tartrate, and also of ergotamine tartrate in combination with atropine, following a tolerance test with from 40 to 60 Gm. of galactose or 40 Gm. of dextrose, may cause a retardation of the resorption of the sugars in the stomach. In these cases the alimentary galactosuria of the normal person, of the patients without disorders of the liver, or of those with liver disease, is considerably reduced by the action of ergotamine. This decrease in the galactosuria is caused partially by disturbances in the resorption capacity of the stomach. However, there are also cases in which there is no disturbance in the gastric resorption, and yet the galactosuria decreases considerably. The latter group included one normal person, one patient with cirrhosis of the liver and three patients with parenchymatous icterus. There is as yet no satisfactory explanation for this action of ergotamine on alimentary galactosuria. It may be due to the fact that the assimilation capacity of the liver cell for galactose is increased as a result of the absence of the sympathetic stimulation. A clinical classification of cases of alimentary galactosuria into a cellular form and into a neurohormonal form was not possible. The slight galactosuria of persons without liver disturbances cannot be aggravated by liver diet. The galactosuria in a patient with exophthalmic goiter could be increased by liver diet, and after the liver diet was discontinued it decreased again. The same manifestation was observed in a case of pernicious anemia during liver treatment or during the administration of desiccated stomach. It is not likely that the increase in galactosuria effected by liver treatment or by stomach powder is due to a specific action of these organs, but rather by hormones that they contain but do not produce.

Zentralblatt für Gynäkologie, Leipzig

54: 2625-2688 (Oct. 18) 1930

*Plastic Operation for Restoration of Cavum Uteri. P. Strassmann.—p. 2626.
*Relation Between Pregnancy and Epilepsy. H. Bachmann.—p. 2636.
Harmful Results of Iodine Injections. J. Frigyesi.—p. 2642.
Harmful Effects on Offspring Caused by Roentgen Rays. H. Heilendall.—p. 2646.
Chorio-Epithelioma Immediately Following Hydatid Mole. W. Rosenstein.—p. 2652.
Alleviation of Pain and Stimulation of Peristalsis After Operations. E. von Konrád.—p. 2656.
Dangers of Vaginal Examination of Parturient Women. J. Klenitzky.—p. 2662.

Plastic Operation for Restoration of Cavum Uteri.—Strassmann reports the case of a woman, aged 34, who complained of cramplike pains in the abdomen, absence of menstruation, backache, constipation, a downward pressure even when reclining, and palpitation of the heart. These troubles had existed since an abortion three years previously. At that time curettage had been done and she had had fever, hemorrhage and chills. Since then ovarian preparations had been administered without success. Examination by the author revealed that the sound could be inserted into the os uteri only to a depth of 2 cm. An atresia of the corpus existed and the cavum was completely obliterated. Having observed several similar cases during recent years, in all of which conservative treatments had failed, the author planned an operation for such cases. The aim was to produce a new cavum uteri by implanting a uterine tube. It was thought that perhaps menstruation would return. The success of the operation depended on the existence of a healthy tube. The technic of the operation and also the special difficulties in this case are described in detail. The operation was successful. The abdominal pains disappeared, menstruation set in again and the psychic depression, which had accompanied the disorders, likewise disappeared.

Relation Between Pregnancy and Epilepsy.—Bachmann observed two pregnant women in whom epilepsy became exacerbated in the course of the pregnancy. He also reviewed the literature regarding the relation between pregnancy and epilepsy. On the basis of his own observations and on the reports of other investigators he reaches the following conclusions: 1. Pregnancy may influence epilepsy either favorably or unfavorably or it may have no influence whatever. 2. Statistics show that each of these groups comprises about one third of the total number of cases. 3. So far it has not been proved that epilepsy may be cured by a gravidity, nor has it been proved that gravidity may cause epilepsy. 4. It may be assumed that in epilepsy in or outside of pregnancy there exists a special cerebral predisposition for epilepsy. 5. The relation between gravidity and epilepsy seems to be due to hormonal effects of the female genitalia. 6. These hormonal influences of the female genitalia may either check or increase the existing epilepsy. 7. The health prospects of the offspring of an epileptic mother are extremely unfavorable. About 35 per cent die young, 20 per cent develop mental disturbances, 7 or 8 per cent have some form of paralysis, and only from 20 to 25 per cent are normal. 8. Artificial interruption of pregnancy is advisable when epilepsy develops during pregnancy or when it becomes more severe; also in epileptic mental derangement. 9. In view of the eugenic conditions, prophylactic sterilization is advisable for every woman with epilepsy. 10. In cases in which pregnancy has to be interrupted on account of epilepsy, sterilization also should be done.

Vestnik Rentgenologii i Radiologii, Leningrad

8: 299-384, 1930

*Etiology of Leukemia. A. Yugenburg and K. Chochia.—p. 299.
*Roentgen Therapy of Leukemia. M. Nemenov.—p. 311.
*Roentgen Therapy of Lupus. K. Glikina and K. Jirmunskaya.—p. 319.
Spontaneous Healing of Pulmonary Cavities. A. Katsman.—p. 333.
Influence of Gamma Rays on Cicatrization of Skin. V. Sukharev.—p. 341.
Method for Roentgen Examination of Lumbosacral Vertebrae. B. Dukelskiy.—p. 345.
*Roentgen Exploration of Lobus Azygos. A. Jabotinskiy.—p. 351.
Gastric Cancer in Boy Aged Eleven. M. Mints.—p. 357.
Diagnosis of Thymoma. A. Rabinovich.—p. 361.

Importance of Renal Insufficiency in Patients with Leukemia.—Yugenburg and Chochia's observations were conducted on twenty-one patients with myeloid leukemia and on twenty-five patients with lymphatic leukemia. The diet consisted of 200 Gm. of meat, 200 Gm. of bread, 400 Gm. of potatoes, two eggs and 25 Gm. of butter. The daily amount of uric acid eliminated in the urine and the amount of uric acid contained in the blood were determined by Benedict's method after the diet had been continued for two days. The measurement was made once or twice before the roentgen treatment, several times during the treatment, and then before the patient was discharged, or one or two days before death. The amount of uric acid in the blood of healthy persons on the same diet varied between 0.003 and 0.004 mg. per hundred cubic centimeters; the daily amount of uric acid eliminated in the urine was from 0.4 to 0.5 Gm. The uric acid content of the blood was constantly increased; in five instances the content was twice the normal amount. Hyperuricemia also developed in cases in which the

leukocytosis was only moderate; in one instance, the leukocyte count was 30,000. On the other hand, an excessive increase of uric acid in the blood appeared to be connected with phenomena of a severe intoxication, while the daily amount of uric acid in the urine was either normal, or increased or decreased. Hence accumulation of uric acid in the blood depends not only on disintegration of the leukocytes but also on an insufficient elimination of uric acid due to a deficient renal functioning. In cases in which roentgen therapy resulted in marked improvement, the authors' uric acid coefficient (the ratio of uric acid in the blood to uric acid in the urine) decreased as compared with the normal coefficient, which is equal to 7.5 or 8. Evidently, reduction of the coefficient is significant for prognosis. In cases in which irradiations failed, the coefficient increased, because the amount of uric acid eliminated with the urine decreased. The same was observed in cases in which roentgen therapy resulted in a reduction of leukocytosis; namely, when an excessive formation of endogenous purines was probable. The fact that simultaneously with the amount of uric acid that of residual nitrogen increased in the blood (from 60 to 80 mg. per hundred cubic centimeters) indicated renal insufficiency in cases of severe leukemia. This was confirmed on microscopic examination when pronounced changes were found in the kidneys. The changes consisted in infiltration of the renal parenchyma and in degenerative and inflammatory lesions of the epithelium of the uriniferous tubules. It is probable that the renal changes occur secondarily from compression of the renal parenchyma by foci of myeloid or lymphoid infiltration. The treatment of leukemia should aim to improve the renal functioning and thus remove exogenous purines from the organism. Obviously, liver, which is rich in purines, should be excluded from foods of patients with leukemia. Roentgen rays are able to prevent accumulation of endogenous purines in the organism; small doses of rays are indicated in such cases.

Treatment of Leukemia with Roentgen Rays.—Nemenov warns that only small doses of roentgen rays applied at long intervals, should be used in the treatment of leukemia. His conclusions, based on more than 100 cases, are that a deficient renal functioning is an important factor in leukemia. Large doses of roentgen rays favor disintegration of nuclei; this results in an accumulation of uric acid in the blood and severe intoxication due to a deficient functioning of the kidneys. The author describes his method in detail. The treatment has resulted in considerable improvement. So far it has not been ascertained whether roentgen rays destroy only the pathologic lymphoid or myeloid tissue that is compressing the renal parenchyma, or also whether they improve the secretory functioning of the kidney. Irradiation of the kidneys is useless when the deficiency of the kidneys is connected with degeneration of the renal epithelium.

Indications for Roentgen Treatment of Lupus.—Among Glikina and Jirmunskaya's 264 cases of lupus, roentgen irradiations were followed by improvement in 7.8 per cent; in 4.9 per cent, recurrences developed from one to two years afterward. Aggravation of the disease occurred in 1.5 per cent, atrophic scars and telangiectasia in 7 per cent, and roentgen ulcer in one case. The results were more satisfactory in cases of ulcerative lupus of the skin and the mucosae. In none of twelve patients with an ulcerative lupus were recurrences observed up to three years; others were lost sight of, after a rapid cicatrization of the lupus. Hypertrophic lupus in nine patients was benefited by the roentgen rays. The treatment was suspended or entirely discontinued if the first irradiation caused aggravation of the patient's general condition. In case of lupus, treatment with Finsen light is preferred to roentgen rays.

Roentgen Exploration of Accessory Lobe of Right Lung (Lobus Azygos).—Jabotinskiy emphasizes that the presence of an accessory lobe in the right lung is not exceptional. He found it in 3 of 1,400 roentgenograms and in 2 of 600 patients examined. Lesions limited to the accessory lobe were recently described by several authors. In cases in which a pathologic process of the pulmonary apex can hardly be diagnosed, the possibility of lesions in an accessory lobe ought to be kept in mind. During lifetime, the presence of such a lobe is revealed exclusively by roentgenograms.

Acta Obstetricia et Gynec. Scandinavica, Helsingfors

10: 247-359, 1930

*Passage of Some Substances from Mother to Fetus in Last Part of Pregnancy. E. Brandstrup.—p. 251.
*Function of Mucous Membrane of Uterine Tube. A. Westman.—p. 288.
*Function of Ovary After Roentgen Ray Sterilization. A. Westman.—p. 299.
Case of a Racemose Ovarian Cystoma of Extra-Ovarian Origin. L. Dahlgren.—p. 311.

Passage of Substances from Mother to Fetus in Last Part of Pregnancy.—Brandstrup gives a description of a special technic by which one is enabled to make concurrent serial analyses on the blood of the mother and the fetus after maternal intravenous injection of the substance to be examined for passage from mother to fetus. He reports the results in a number of experiments on the passage of dextrose, saccharose, lactose, arabinose and xylose. The passage of dextrose and pentoses is explainable as a slow diffusion through a passive membrane, while the placental epithelium proves almost impermeable to disaccharides.

Function of Mucous Membrane of Uterine Tube.—Earlier investigations have shown that the cells of the ciliated epithelium are largely transformed into secretory cells during the passage of the ovum through the tube. This transformation process is regulated by the ovary. Westman has tried to clarify the biologic task of the tubal secretion. Rabbits have been castrated twelve hours after coitus, the ova having then just entered the tube. In so doing the transformation of the ciliated cells into secretory cells is inhibited. On serial microscopic examination of the tube from the operated animals, at the time when the ova are located in the uterine portion of the isthmus, all the ova were found to be more or less degenerated and lacking the thick mucous cloak normally surrounding them. As the ova are lying free in the tube they are unable of being influenced by the mother organism in any other way than by the secreta present in the tube. On alteration of this which happens in castration the ova undergo degeneration. It must be concluded, therefore, that the secretory activity of the tubal mucous membrane is of decided importance for the life of the ovum.

Function of Ovary After Roentgen Sterilization.—Westman found that after roentgen irradiation of mice the follicular apparatus begins to undergo degeneration and the ovary is built up of large lutein-like cells which mainly originate from the follicular epithelium and to a less extent also from the theca interna and the interfollicular cells. After a certain period of time atrophy of the newly formed cells sets in. The vaginal cyclic estrus reaction goes on undisturbed for about two months after irradiation. A period of continuous heat then sets in, after which the vaginal tests present an indifferent appearance. It is impossible at this time by implantation of anterior pituitary body again to induce estrus. This can be done only when undamaged follicles are present in the ovary. The teaching of the ovule as the prime factor is correct to the extent that a permanent normal ovarian function is attached to the presence of maturing egg-carrying follicles.

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92: 1021-1038 (Oct. 30) 1930

Tests of Kidney Function: Brief Review of Theory and Practice. C. Holten.—p. 1021.
*Blood Volume in Patients with Essential Hypertension. S. A. Holbøll.—p. 1024.
*Riva-Rocci's Cuff in Production of Temporary Hemostasis. L. C. Stage.—p. 1025.
Seventh Congress of International Union Against Tuberculosis. J. Gravesen.—p. 1026.

Blood Volume in Patients with Essential Hypertension.—Determination of the volume of the blood in twenty-four patients with essential hypertension gave results which correspond to the values found by the same technic in normal persons. Holbøll therefore concludes that the pathogenesis of essential hypertension is not related to a change in the quantity of the circulating blood.

Riva-Rocci's Cuff in Production of Temporary Hemostasis.—In checking hemorrhage in the forearm, Stage finds that the use of Riva-Rocci's sphygmomanometer cuff allows the least possible pressure and distribution of the pressure, so that injury of the tissues is prevented.